An Address

ON

THE SIGNS OF EARLY DISEASE OF THE THYROID GLAND.

DELIVERED AT A COMBINED MEETING OF THE BURNLEY AND DISTRICT MEDICO-ETHICAL SOCIETY, AND BURNLEY DIVISION OF THE BRITISH MEDICAL ASSOCIATION.

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IN many diseases which develop gradually and run a chronic course the earliest signs of ill-health are apt to be overlooked. The textbooks, as a rule, describe a disease as it appears in its typical form, while insufficient attention is paid to the symptoms of the early or mild forms of the malady. It thus happens that a disease may have made considerable progress before it is recognized, and so valuable time is lost, during which suitable treatment might have been applied.

I propose, therefore, to-day to draw your attention to some of the signs of early thyroidal disease, which, though by no means rare, are not as well known as they might be.

In diseases of the thyroid gland symptoms of two kinds may occur. In those in which the gland is increased in size there may be local symptoms due to the enlargement itself. These are mechanical in origin, and are the result of the pressure exerted by the goître upon neighbouring structures in the neck. The other symptoms are due to variations in the functional activity of the gland induced by the structural changes which occur in it.

When the various pathological changes to which the thyroid gland is liable are fully developed the symptoms are so marked and striking that the diagnosis presents no difficulty. The various forms of goître are readily recognized as such, the real difficulty being not to determine whether the tumour is a goître or not but to distinguish between the different varieties of goître which may occur. A well-marked case of exophthalmic goître, of myxoedema, or of cretinism is readily diagnosed, provided the observer is familiar with the general aspect of the disease. On this occasion we may with advantage consider some of the early symptoms presented by these diseases by which we may recognize them at the earliest possible moment and so lose no valuable time in applying the most appropriate treatment. The importance of this is twofold. First, one finds that patients in the earlier stages of thyroidal disease may go about for a considerable period without the true nature of the disorder being recognized; secondly, the value of early treatment is so great, both in diminishing the period of ill-health and in obtaining a better result than when it is deferred until the disease has become fully established.

Some of these cases with slight symptoms are in an early stage of a more severe attack which will follow if treatment is not successful in checking their further development. Others are mild types of the disease, and may for long remain stationary in this condition. Such cases, both of myxoedema and Graves's disease, have been described by Continental writers as *formes frustes*—an unnecessary term, as they are simply mild cases such as we find in so many other maladies.

As the function of the thyroid gland is to supply an internal secretion which escapes by way of the lymphatics into the blood stream, by which it is distributed to all parts of the body, diseases of the thyroid may be divided into three classes, according to the manner in which this function of the gland is influenced by them. Thus some diseases have no appreciable effect upon the secretory function of the gland; others lower or abolish it according to their severity, and in yet a third class it is greatly increased and possibly perverted as well.

As examples of the first class may be cited uncomplicated acute thyroiditis, simple parenchymatous goître, and many cases of adenomatous or cystic goître. The second class is illustrated by cretinism and myxoedema, and the third by exophthalmic goître and those cases of goître in which the "goître-heart" is present.

SIMPLE PARENCHYMATOUS GOÎTRE.

The normal thyroid gland is subject to variations in volume, as it may become temporarily enlarged during menstruation or pregnancy, subsiding afterwards to its usual size. Such enlargements are physiological, and occur in response to some temporary stimulus or demand for an increased functional activity. In many cases, however, a simple enlargement of this kind tends to go on increasing in size and becomes pathological. This occurs most frequently in adolescents and young adults, and much more frequently in women than in men. In the early stages the swelling is apt to escape notice unless the thyroidal region is inspected and palpated in the course of a routine medical examination. As the thyroid grows the total circumference of the neck is increased, and the gradual tightening of the collar may first draw attention to the goître. On inspection the front of the neck looks full and rounded, and the skin is often marked by the pressure of the collar stud. If the patient be made to swallow a mouthful of water the swelling is seen to rise and fall again during the act of deglutition. This movement of the swelling is characteristic of all enlargements of the thyroid gland, unless it is fixed by adhesions, or, as in the case of malignant goître, by the extension of the disease through the capsule into the surrounding parts. During this movement the horseshoe shape of the uniformly enlarged gland is often clearly to be seen. On palpation the swelling will be found to take the same shape as the thyroid gland, though it will be several times as large. It is firm and elastic in consistence, and there is no tenderness on pressure. No thrill can be felt, nor is any murmur as a rule audible on auscultation over it. When the goître has reached a larger size, the veins overlying it may be enlarged and visible; there may be a sense of fullness in the neck and some difficulty in breathing. This, however, is much more common in adenomatous and cystic goîtres than in the form under consideration.

This simple parenchymatous goître may be distinguished from exophthalmic goître by the absence of tachycardia and other symptoms of Graves's disease, and from enlargement due to the presence of adenomata or cysts by its symmetrical shape, though of course the two forms of enlargement may be combined in the same case.

As this form of goître is a simple hypertrophy which takes place in response to a demand for increased activity, it is analogous to the hypertrophy of the mammary gland which takes place during pregnancy and lactation. The treatment is therefore on rational lines, and consists in supplying the increased amount of thyroidal secretion which is required from another source. When this is done the gland gradually diminishes in size. If the treatment is commenced at an early stage the gland may return to its normal size. If the hypertrophy has been present for some time the result may not be so good, but a marked reduction in size may be expected in many cases. As an illustration of this class of case I may refer briefly to the case[1] of a girl, aged 13, who was under my care at the Newcastle Royal Infirmary, in which there was a considerable goître which caused some difficulty in breathing. The total circumference of the neck was 16½ in., and after treatment for eleven weeks it was reduced to 13 in., and the symptoms due to the goître were removed. In this and other similar cases the question of an operation for the removal of a portion of the goître to relieve the dyspnoea had been considered, but was obviated by the treatment.

As a general rule, when a goître is unilateral, the enlargement is due to an adenoma or cyst in one lobe. The size of an adenoma or a cyst would not be affected by thyroid extract. I have, however, seen one interesting case which was sent to me by Dr. A. Smith, of Whickham, in which one lobe alone was enlarged. I regarded this enlargement as being due to an adenoma, and advised its removal, as there were signs of pressure. The patient, however, refused operation, and therefore we decided to try the effect of thyroid treatment. To our surprise, the enlarged lobe steadily diminished in size, and the patient was relieved of her symptoms. This case suggests that a

unilateral goitre may in some cases be due to a simple hypertrophy, and that it is worth while to try the effect of this treatment if there is any doubt as to the cause of the enlargement.

In cases of simple goitre it generally suffices to give from 3 to 5 grains of dry thyroid powder in a tablet each night. In some cases it is advisable to give this dose two or three times daily, provided no marked acceleration of the pulse occurs. If there is no distinct reduction in the size of the goitre after treatment for a month or six weeks, there is nothing to be gained by continuing it further. If there is a decided reduction, it is advisable to continue the treatment for three or four months, so as to obtain its full benefit, and to resume it for a month occasionally if there is any sign of recrudescence.

If goitre is at all prevalent in the district the patient should drink no water unless it has previously been boiled or distilled. The local application of iodine, especially in the form of the red iodide of mercury ointment, is also useful.

Myxoedema.

We may pass on now to the consideration of the mild type of myxoedema which results from a partial fibrosis of the thyroid gland, which occurs not uncommonly in women between 40 and 50 years of age. When the fibrosis is complete, a fully-developed case of myxoedema results. In arriving at this advanced stage of the disease, the symptoms are at first slight. I believe, however, in some cases that the fibrosis of the thyroid is only partial for a long period. In some it possibly never progresses beyond this stage. Thus, we occasionally come across these mild early cases of myxoedema which have been neither recognized nor treated, the result being a prolonged period of ill-health for the unfortunate sufferer, which she might have been saved if the disease had been diagnosed and treated at its commencement.

The symptoms which result from partial thyroidal fibrosis usually come on very gradually, between 40 and 50 years of age, and are not infrequently mistaken for those which so commonly occur in women during the menopause. There is a gradual loss of mental and physical energy, so that every action appears to require a special effort. The result is that the patient's sphere of action becomes more and more restricted. Such patients say they take no pleasure in life and have lost interest in their surroundings. They are apt to shun the society of others and to become depressed and melancholy at times. If by force of will a normal mode of life is continued they will tell you this is only accomplished by a considerable mental effort and expenditure of energy. The memory is often defective, especially for names and for recent events. Slight visual hallucinations are very common. They are rarely complained of, but a clear account of them may be obtained on carefully interrogating the patient. In these slight cases the hallucinations are not, as a rule, so clearly defined as they are in some advanced cases, but take the form of some ill-defined object, indistinctly seen "out of the corner of the eye," like a mouse rapidly crossing the room. Sensations of cold are often complained of, although the temperature of the body may be scarcely, if at all, below normal. The facial appearance is somewhat altered. The cheeks become rounded and fuller, and a central pink flush appears. This change may impart a fictitious appearance of improved health and nutrition, which is liable to be mistaken for such by the friends of the patient, who imagine that she is getting stout and rosy. A careful inspection will, however, show that there is also a small amount of swelling of the eyelids, which has a translucent appearance like the swelling due to a slight subcutaneous oedema, but does not "pit" on pressure. The skin of the face may be rather pale and waxy in appearance, or it may have a pale yellow tinge. The lips are rather swollen and the mucous membrane pale. The eyebrows may be rather scanty, and the forehead is often transversely wrinkled.

The subcutaneous swelling on the body generally is not sufficient to attract the patient's attention, though it may be found on careful examination. In the supraclavicular region the swelling may be quite distinct. The hands are somewhat altered in appearance, the back of the hand being rounded and swollen. The feet often show a similar condition, though the swelling may not be sufficient to necessitate the use of a larger size of boot, as in the more fully-developed stages of the malady. The skin is rather dry; on the backs of the hands it may be smooth if there is much swelling, or it may be loose and wrinkled, like that on the hand of a washerwoman. A fine desquamation takes place, especially on the legs, the results of which are clearly seen, on removing a pair of black stockings and turning them inside out, as a fine white powder. The hair may partially come out, though its texture may not be appreciably altered.

Such are the main symptoms produced by early thyroidal fibrosis, easily recognized when looked for, but otherwise easily passed over. In doubtful cases a careful examination of the thyroidal region of the neck may show that the gland is diminished in size. As already mentioned, these symptoms are liable to appear at the time of the menopause. When the ovary atrophies at the same time as the thyroid gland, the symptoms of the menopause, such as a feeling of pressure on the top of the head, hot flushes and sweats, may occur in addition to those which are due to the thyroidal fibrosis. The nervous symptoms in each case are somewhat similar. A careful examination of the patient for the slight signs of myxoedema will, however, enable a correct conclusion to be drawn as to the cause of the symptoms complained of.

There is a condition of lipomatosis which I have seen in several cases which closely resembles a slight form of myxoedema, which has not as yet received adequate recognition. In this there is an elastic subcutaneous swelling like that which we see in myxoedema, but differing from it in distribution. The skin is not dry as it is in true myxoedema. The hair and nails are unaffected. The swelling is generally more localized than in myxoedema. One case which appeared to be of this type occurred in a lady of 31. There were well-marked swellings in the supraclavicular region, over the deltoids, over the hips and upper gluteal region. The swelling was greater on the right side of the body than the left. The circumference of the right arm at the level of the insertion of the deltoid was 13 in., of the left 12¾ in. The circumference of the middle of the right thigh was 22½ in., of the left 20½ in. In these cases the swelling has no sharp edge, but gradually shades off, and it is quite painless. In addition to the situations already mentioned, it may be present on the backs of the hands. As a rule the face is not affected; if it is the swelling is only in the cheeks, which have no central flush, and there is no swelling of the eyelids as in myxoedema. When the swelling covers a considerable area, as it does on the outside of the thigh, the skin is dimpled when it is pinched up between the finger and thumb. The final test is the action of thyroid extract. It will be found that even after taking two or three times as much thyroid extract as would suffice to relieve a true myxoedema in the course of a month, these swellings are only slightly, if at all, diminished in size. They appear to consist of irregular deposits of subcutaneous fat, and are possibly more closely allied to the swellings which occur in adiposis dolorosa, from which, however, they differ in size and in the absence of all pain and tenderness.

The treatment of these cases of mild myxoedema is simple. Thyroid extract should be given in doses of 5 minims of liquor thyroidei each night for a month. If decided improvement has then taken place this dose may suffice, if not, it is advisable to increase it up to 10 minims, and to continue this dose until all the symptoms have disappeared. The permanent dose will be from 5 to 7 minims, for it must be clearly understood, and also explained to the patient at the outset, that the treatment must be continued for the rest of her life. If, later on, the partial fibrosis becomes total it will be necessary to increase the permanent dose to 10 minims each night. This amount of the extract appears to correspond to the daily output of secretion from an average normal gland. This statement is based on the fact that my first case of myxoedema, in which I believe there is now no active portion of the gland left, has been kept quite free from myxoedema for more than seventeen years by this dose taken six nights in the week.

Exophthalmic Goître.

We have now to consider the effects of hypersecretion of the thyroid gland, just the opposite condition to that

which obtains in myxoedema. The result of excessive secretion is best seen in a typical case of exophthalmic goître. The microscopical appearance of the enlarged thyroid gland exhibits changes which indicate that there is an enormous increase of functional activity. Fully-developed exophthalmic goître is so characteristic that no description is required. The goître, exophthalmos, rapidly-beating heart, with nervousness, tremors of the hands, and emaciation, make up a clinical picture which can be readily recognized. It is, however, to the less obvious cases that I wish more particularly to draw your attention. In the first place I may remind you that in more than a quarter of all the cases of definite Graves's disease one symptom, and that the most obvious of all, the exophthalmos, is absent. Thus in 170 of my own cases[2] exophthalmos was present at some stage of the disease in 123, but in 47, or more than 25 per cent., there was no exophthalmos at all. Why this remarkable sign is present in one case and yet absent in another which otherwise has similar symptoms cannot at present be explained. The whole pathology and causation of the exophthalmos is still obscure. Of the various explanations of it which have been given, the only one which is tenable is that which attributes it to an abnormal development of the retro-bulbar fat in the orbit. At an autopsy this mass of fat presents a striking appearance, and may be seen even in cases in which there is such a degree of general emaciation that hardly any fat is visible in other parts of the body. The fat from one orbit alone in one of my cases weighed ½ oz. A simple experiment will show how such a mass of fat produces exophthalmos. The head of a dead sheep or smaller animal, such as a guinea-pig, will serve the purpose quite well. The upper part of the skull and the brain are removed so as to expose the optic foramen. A small trocar and cannula are pushed through the optic foramen alongside the optic nerve until the orbit is reached. The trocar is withdrawn, and a warm syringe filled with melted paraffin or agar-agar to which some colouring matter has been added is attached to the cannula. The fluid is then injected into the orbit behind the eyeball, which gradually begins to protrude, and any degree of exophthalmos can be produced according to the amount of fluid injected. Later the orbit can be opened and the distribution of the solidified agar-agar examined. The exophthalmos thus persists after death, which it would not do if it was caused by vascular congestion or spasm of Müller's muscular fibres.

Exophthalmos is so striking a symptom that when present the diagnosis is easy. It is, however, to the cases in which this symptom is absent that I wish to direct your attention. When there is no actual exophthalmos there may be a rather staring expression in some cases, which is due to a slight spasm of the elevator of the upper eyelid (Stellwag's sign). This may be either constant or intermittent. When it is persistent there is a notable absence of blinking, the palpebral fissure is rather wider than it should be, and the effect is to give a rather startled expression. When it is temporary it may only appear for a moment when the eyes are suddenly directed in some new direction. The patient will probably come to you complaining of palpitation. This may only be felt from time to time, or it may be continuous. If always present it is easily aggravated by any exertion or excitement. Disagreeable throbbing, especially in the carotid arteries, is often mentioned. The pulse will be found to be frequent—100 or very often 120, or even 130 or 140. If the patient is examined when lying in bed the pulse will be less frequent by 10 or 20 beats a minute. Apart from infective diseases and organic disease of the heart, Graves's disease is the commonest cause of persistent tachycardia. In fact, in all cases, apart from cardiac and infective maladies, in which there is a frequent pulse of 90 or more, it is most important to look carefully for other signs of exophthalmic goître. Many of these cases are described as examples of paroxysmal or persistent tachycardia and their true nature overlooked. This frequent pulse is such a constant symptom that in 178 of my cases of exophthalmic goître in which the frequency was recorded, in only 4 was the pulse between 90 and 100, while in 174 it was between 100 and 200. In some of these slight or early cases palpitation may not be complained of, and it is only on examination that the high frequency of the pulse is discovered.

On examination the heart is found to be beating more or less violently and the cardiac impulse can be both seen and felt over a larger area than usual. In these mild cases of the disease there is generally no dilatation or other change in the heart itself. The action of the heart is precisely similar to that we often find in a healthy but nervous young man who presents himself for examination for life assurance or who is undergoing any other mental strain or has just taken violent exercise. If the tachycardia is the *only* symptom present and the thyroid gland is not enlarged, we may conclude that it is not a case of Graves's disease. For example, I recently saw a lady, aged 52, who had suffered from palpitation for four years. The palpitation came on during an attack of influenza. The pulse was 120 sitting, 104 lying down. The thyroid was normal in size, there were no ocular symptoms, no definite tremor and the weight was increasing. The heart was normal in size and there was no valvular disease. Such a case must be regarded as one of simple post-influenzal tachycardia.

The enlargement of the thyroid gland is generally slight. The gland may be only twice or thrice its normal size, so that the swelling may not even be noticed by the patient at all. It is necessary, therefore, in these cases to make a careful examination of the front of the neck to determine whether there is enlargement or not. It is important while doing this to make the patient swallow a mouthful of water, as in some cases the gland lies rather low down in the neck, and a slight enlargement is more readily detected during the upward movement which accompanies deglutition. The enlargement is uniform and painless. A very notable feature in these cases is the mental condition. The general characters of the mental state in the fully developed disease are well known. In the slight cases also the mental condition may be quite characteristic. There is a condition of irritable weakness, in which a desire to perform many active duties is accompanied by an inability to accomplish them without inducing a disproportionate amount of fatigue. Such patients are anxious to undertake useful work, but are very fussy and nervous in doing it. They feel uncomfortable when in a crowded assembly, and are often obliged to leave early. They are restless, and find it difficult to continue any single occupation for long. There is a remarkable tolerance of cold and sensitiveness to heat, a result, doubtless, of the increased oxidation going on in the tissues. This condition of general nervousness often shows itself in the presence of strangers.

The characteristic fine tremor of the hands is usually present, though it may be necessary to look closely to see it. This tremor was present in 163 of my 180 cases. It was absent in 7, and was not noticed in 10. Weakness of the legs and a feeling as if they would give way in walking may be complained of in these mild cases.

No case should, then, be regarded as one of Graves's disease unless the pulse is 90 or more a minute, and there is either slight exophthalmos, some enlargement of the thyroid, or tremor as well. If two or three of these symptoms are present, the case should be regarded as a mild case of Graves's disease.

There is a special variety of Graves's disease which is generally described as secondary, which may occur in a mild form. As I have already mentioned, in cases of simple goître of various kinds there is, as a rule, no evidence of hypersecretion, and so the symptoms are purely local. In some cases of goître, even of some standing, however, the secreting activity becomes increased. This may be so marked that the symptoms of Graves's disease are fully developed, and there is no difficulty in recognizing that we have to deal with a distinct case of secondary Graves's disease. Fourteen of my 180 cases were of this type. In 2 of them the goître had been present for thirty years, and in others for various periods of from three to twenty-five years before symptoms of hypersecretion developed.

There are, however, cases of goître in which tachycardia appears alone without other symptoms. These cases have been described by Continental writers as examples of "goître-heart," so it is well to recognize the existence of these cases, especially in view of any operative treatment, as there is more risk when these signs of cardiac disorder are present than when they are absent altogether. The pathology of this condition is probably the same as

that of Graves's disease, the symptoms being due to excess or change in the character of the thyroidal secretion.

It is also well to remember that if for any reason a patient has been taking large doses of thyroid extract for a long period a condition of thyroidism may be produced in which many of the symptoms of Graves's disease develop—such as tachycardia, tremor, nervousness, sweating, and emaciation.

Time will only permit me to allude very briefly to the treatment of these slight cases of exophthalmic goître. As in fully developed cases, we must enforce a sufficient amount of mental and bodily rest according to circumstances. A liberal diet, which includes two or three pints of milk, is required to compensate for the increased metabolism. A mild faradic current applied to the neck for two or three hours daily is often most beneficial. A prolonged course of arsenic in small doses, with or without the addition of tincture of convallaria, is also useful in most of the cases. On no account should thyroid extract be given in these cases, as it naturally only aggravates the symptoms.

REFERENCES.
[1] *Edinburgh Medical Journal*, August, 1900. [2] *Lancet*, November 11th, 1905.

Remarks
ON
THE NATURE AND TREATMENT
OF
PARENCHYMATOUS GOÎTRE.

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UNDER the term "goître" several varieties of enlargement of the thyroid gland are embraced, and in classifying them great difficulty is felt at the outset from the fact that the varieties are not very distinct.

Part of the gland may show changes characteristic of one class, while another part may display all the features of a goître of another class. English pathologists regard parenchymatous goître as distinct from adenoma of the thyroid, but the German schools do not make this distinction. But there is much to recommend the English classification from the point of view of the practical surgeon.

The normal thyroid gland consists of a vascular fibrous stroma, including in its meshes rounded follicles or acini which either possess a central lumen or are filled entirely with epithelial cells. The acini are lined with a single layer of cubical epithelium without basement membrane, and the lumen may be either clear or filled with colloid material.

PARENCHYMATOUS GOÎTRE.

In parenchymatous goître there is glandular proliferation which results in the production of clusters of cells or of gland-like acini lined with epithelium, which may be somewhat irregular and flattened compared with the normal gland. Both varieties may be seen in the same specimen. The cut surface of a fresh goître shows to the naked eye a reddish or dark brown colour; in parts where many of the acini contain masses of colloid material the section has a translucent honey-like appearance. All the tissue elements in these goîtres are increased in amount.

The patient presents a smooth, full neck, reminiscent, when present to a small extent, of Burne-Jones's paintings. This condition is more common in females than in males, and generally commences about the age of puberty. It is at first quite painless, giving rise to no discomfort. The consistency of such a gland is rather soft and has a somewhat elastic feeling on palpation. It is movable on swallowing.

It frequently enlarges during the menstrual period, and the patient sometimes complains of a slight sensation of suffocation at that time. The voice is not altered and no laryngoscopic changes are to be seen. In many of these cases I have found great hypertrophy of the tonsils, and removal of these seems to have some influence in producing diminution in the size of the gland; possibly this may be due to the improvement of the patient's general condition.

This mild variety of parenchymatous goître, which is exceedingly common in Derby and Derbyshire, often subsides gradually without treatment as the patient develops. It is quite common for people here to say that they had a Derbyshire neck when they were young. The popular treatment in the female is to apply a string of artificial pearls or a black velvet neck band, and I was recently much interested to read in the BRITISH MEDICAL JOURNAL that the Abyssinian treatment of goître is to tattoo a string of beads round the neck.

Besides the enlargement of the gland at the menstrual period I have seen the same occur during pregnancy, and decrease in size after childbirth.

When the goître enlarges to a further degree, the swelling is unsightly, the feeling of suffocation becomes more marked, especially in the recumbent posture. There is often associated anaemia, and the case demands treatment.

An inquiry into the residential situation of the patient is made, and the water supply and general hygienic surroundings ascertained. The water should be boiled and flavoured with lemon to make it palatable. Internally a mixture containing iodine and potassium iodide is given, and if there is anaemia, iron and arsenic also. Thyroid extract may be tried, commencing with ½-grain doses every other day, and gradually increasing it up to 1 grain three times daily. But the effect on the pulse should be most carefully watched. In my experience the result of treatment with thyroid extract has been very disappointing. If no diminution occurs with this treatment after a month's trial it is useless to continue. Locally the red iodide of mercury ointment has seemed to have some effect, the patient spreading it over the enlarged gland, and then sitting in bright sunshine or before a hot fire. It is very difficult not to blister the skin, however, and although good results are reported from India, its effect has not been very convincing in my own practice.

If such cases are watched for some time the swelling, instead of being uniform, becomes asymmetrical. The changes producing the asymmetrical enlargement are briefly as follows: The acini undergo great dilatation with colloid, the lining cubical cells become flattened, the intervening stroma is absorbed, and a small cyst is formed. This degenerative cystic formation generally causes the formation not of a single cyst but multiple small ones. Haemorrhage may take place in these, thus increasing their volume. Another cause of asymmetry is the growth of a definite encapsulated adenoma, which in its turn often becomes cystic. There may be one or many adenomata, and all stages of cystic degeneration of these may be seen in one gland. Again, asymmetrical enlargement is seen in carcinoma, primary or secondary, in sarcoma, and in endothelioma of the gland. Suppuration is yet another cause of asymmetrical enlargement, and is due to breaking down of new growths, especially sarcoma, to suppuration in a pre-existing cyst, either due to auto-infection or to the injudicious introduction of a septic needle. Metastatic pyogenic deposits have been seen in pyaemia and very rarely gummata and tuberculous granulomata.

If the parenchymatous goître is of long standing, other degenerative phenomena are common. Fibrous degeneration, with shrinking of the acini and blood vessels and great increase of the fibrous tissue stroma, may be found. This has been observed to lead to myxoedema, or at any rate patients with myxoedema sometimes give a history of having had previously an enlarged thyroid. Impregnation of the fibrous tissue stroma and colloid substance with lime salts is quite common, and true bone is said to have been observed. Colloid degeneration of the stroma itself is sometimes seen; and in such cases the walls of the blood vessels, becoming softened, may give way and a sudden enlargement of the gland due to haemorrhage take place. Amyloid degeneration is occasionally found, the arteries being the chief seat of change, but circumscribed amyloid deposits have been also seen.

Course.

Many goîtres, besides the deformity and slight dyspnoea, give rise to no other symptoms.

Dyspnoea, however, is often urgent, and depends on several factors. The gland being tightly bound round the trachea by the deep cervical fascia causes lateral pressure

on the sides of the trachea, producing the "scabbard-shaped" stenosis. If one lobe only is enlarged the antero-lateral aspect of the trachea is pressed inwards. It is extremely rare for the pressure to be exerted in an antero-posterior direction, and I have not seen such a case. Another cause for very urgent dyspnoea is enlargement of one or both lobes in a downward direction and impaction behind the sternum. Dyspnoea due to paralysis of the abductor muscles of the larynx by pressure on the recurrent laryngeal nerves I believe I have seen in one case: it was most urgent; aphonia was present at the same time, but the patient was far too cyanosed when I saw her to warrant a laryngoscopic examination; hemi-thyroidectomy was performed, and she is now well but has paralysis of the right recurrent laryngeal nerve.

Dyspnoea due to penetration of the trachea may be produced by malignant disease or rupture of a suppurating cyst. Softening of the tracheal rings is supposed to occur, but my experience coincides with that of Berry; in one case in which stridor had been so marked that tracheotomy had been performed I was able to show *post mortem* that the tracheal rings were compressed laterally, but no absorption of cartilage had taken place, and they were in nowise softened.

Besides these cases of dyspnoea, acute oedema of the glottis has been seen, more often in malignant disease of the thyroid than in simple, and swelling of the mucous membrane of the trachea itself may also occur. If there is inflammation of the thyroid gland itself, there may be extension into the lumen of the trachea; but more often the swelling of the tracheal lining is only part of a general catarrhal condition of the air passages due to cold, influenza, etc., and only becomes noticeable from the lumen of the trachea being narrowed by a thyroid tumour. A patient with a parenchymatous goitre often says there is no dyspnoea unless he has a cold, and then it may be very urgent indeed.

Difficulty in swallowing is not a common symptom, but in one case under my care it was the only one. Several cases of intense dysphagia due to goitre have been described, but were mostly due to extensions of the thyroid behind the oesophagus and pharynx.

Pressure on the cardiac nerves and on the large blood vessels has been described, especially in the intrathoracic goitres. Tachycardia and irregular heart-beat and some oedema of the head and face, especially the eyelids, have resulted from such goitres.

The symptoms hitherto detailed have been mechanical or pressure symptoms. If the thyroid gland is removed or atrophies, the train of symptoms known as myxoedema results. Now, when all its elements undergo hypertrophy, are there no physiological symptoms produced other than pressure symptoms?

In order to answer the question properly it is necessary to consider what we know of the secretion of the thyroid gland, which is so necessary to the human body. The thyroid is a ductless gland and the colloid substance which fills its acini is its internal secretion or contains it.

The colloid is formed from the granules which can be seen in the cells of the acinus; these granules discharge themselves into the lumen of the acinus, where the colloid collects until a separation of the cells is produced by pressure and the colloid is emptied into the lymphatic spaces. From these spaces the lymphatic vessels convey the secretion into the blood stream by the thoracic duct, etc. According to some observers the colloid is directly absorbed also by the capillary blood vessels. Chemical examination of the gland shows that it contains two proteids, a nucleo-albumen and the colloid substance. This latter substance is a compound proteid containing iodine, the percentage varying, but forming about 3 per cent. of the dried gland. The colloid is not a nucleo-proteid, as no nuclein is yielded by gastric digestion. When the colloid is subjected to digestion, only those substances which contain iodine possess active properties. The active substance, called iodothyrin, produces the same effect on the metabolism of the body as the gland substance itself. It is a brown amorphous substance, almost insoluble in water, but readily soluble in weak alkalis. It contains phosphorus and about 10 per cent. of iodine and gives no proteid reaction.

The nerve supply of the gland is derived from the laryngeal nerves and the sympathetic. Pembrey did not observe any structural changes in the cells as the result of section or stimulation of these nerves or of the vago-sympathetic trunk, and states that the evidence is all against nervous control of the glandular tissue of the thyroid. Edmunds, experimenting with dogs, comes to much the same conclusion. He says:

> The paralysing operation does produce some effect both clinical and pathological, but not a great effect; and it must be inferred that the secretion of the thyroid gland is due mainly to a chemical stimulus acting directly on the secreting cells, or on the nerve endings distributed to them, or through fibres which pass along the blood vessels with the sympathetic fibres.

The present belief appears to be that the thyroid gland is in a constant state of slight activity, which is increased under certain conditions. The stimuli which affect the gland appear to be chemical and arrive by way of the blood stream. Proteid feeding has been thought to produce hyperactivity, in fowls at any rate; but Forsyth[1] controverts this view, which was put forward by Chalmers Watson in 1904. Fordyce[2] (Edinburgh) has made some interesting observations as to the result of feeding rats with milk only or bread and milk. Increase of colloid was found in the pure milk-fed rats. The fact that symptoms of hyperthyroidism do not occur in all goitres that are hypertrophied cannot be due to diminution of the lymphatic spaces by increased amount of fibrous tissue present and the consequent contraction that would follow. In those cases of parenchymatous goitre in which the colloid is so abnormally increased in amount that the freshly cut surface has a honeylike appearance, one would have expected that the colloid would readily have been absorbed by the lymphatics, which are also increased in number. But as a rule we find no symptoms of hyperthyroidism in such cases, so it is probable that the amount of colloid material is no indication of the amount of active internal secretion, and this enormous increase of colloid is a sign of gland degeneration rather than of increased cell activity.

Exophthalmic Symptoms.

But there are occasionally seen cases—the *formes frustes* of the French—which present clinically in the goitre, and also microscopically, typical parenchymatous glands, and which have also marked general symptoms, especially tachycardia and tremors. It has been attempted to prove that those cases of Graves's disease which have apparently benefited by hemisection came under this category. With this view I disagree, and will relate two cases in justification.

CASE I.

Mrs. C. W. came to the out-patient department of the Derbyshire Royal Infirmary in June, 1905. She had had no children, and gave a history of poor general health. The thyroid was enlarged, especially on the right, where it extended from the right sterno-clavicular joint to the submaxillary region. There was some hoarseness and difficulty in swallowing, but tachycardia, palpitation, and tremors of the hands, faintness and giddiness were the chief symptoms. There was no exophthalmos, and von Graefe's sign was absent. The heart was enlarged, and the pulse-rate 136. There was impaired movement of the right vocal cord.

She was admitted under Dr. Thornton, and as with rest, etc., no improvement followed, I saw the case with him and advised operation. A very large right lobe was removed, and part of the isthmus, the pathological report on which is as follows: "This is a typically parenchymatous goitre. The alveoli of the thyroid are of different sizes, and their lumen is full of colloid substance. There is no small-celled infiltration or epithelial proliferation."

The wound healed by first intention, and she was discharged with a pulse-rate of 80, palpitation and tremor still present; the right vocal cord was still not freely mobile, and the dysphagia had not quite disappeared. For nine months she was kept under observation and the dysphagia became more marked, a swelling in the middle line running up to the thyro-hyoid membrane appeared, and in September, 1906, I removed a lobulated tumour undergoing cystic degeneration. Since then there has been no dysphagia, her general condition is better, and the tachycardia only present on any mental excitement.

This was one of the *formes frustes*, which benefited to a considerable extent by operation.

CASE II.

E. W. had been a domestic servant, but had done no work for two years owing to Graves's disease. The symptoms were increasing swelling of the thyroid gland, pulsation and thrill, very marked exophthalmos, von Graefe's sign, Stellwag's sign, tremors of hands, jerky movements, tachycardia, hot flushes, and wasting diarrhoea. The pulse-rate was 140 when seen in

the out-patient department. She attended for four months and did not improve; she was then admitted under Dr. Thornton, who treated her for six weeks.

As she was getting worse rather rapidly he asked me to operate. I used local anaesthesia, allowing the patient to smell a Skinner's mask flavoured with chloroform. The whole right lobe was removed and the left superior thyroid artery ligatured. The microscopical report was: "This is a thyroid gland showing the characteristic cell proliferation found in exophthalmic goître."

Although rather excitable for twenty-four hours after the operation, she made a rapid recovery and has now been at work for nearly twelve months. Her pulse-rate is about 80 and all her other symptoms have practically disappeared except the exophthalmos, which I think is much the same, but the patient declares is better.

I think it is not necessary to say more to prove that this was a true case of Graves's disease which had benefited by operation. I have had the opportunity of seeing with Dr. Thornton several other cases of *formes frustes* in which the symptoms have not been so well marked, but the occurrence of hyperthyroidism as the immediate result of surgical interference may be touched upon in this connexion.

In one of my own cases, a girl with a large parenchymatous goître and a thick short isthmus, there were symptoms of hyperthyroidea, restlessness, rapid pulse (140), flushed face and slight elevation of temperature for forty-eight hours after operation. The wound, which was drained as usual for twenty-four hours, was perfectly aseptic throughout. After forty-eight hours the pulse-rate came down to normal, and the patient was discharged cured in a week. In a case under one of my colleagues I saw the same condition. In the case of a young man, operated on by Mr. C. H. Hough at the Derbyshire Royal Infirmary, the heart, a few hours after operation, became very rapid and irregular, great restlessness and sweating was noticed, together with tremors of the hands. The patient died in thirty-six hours from the time of operation. All these cases were both clinically and microscopically parenchymatous goîtres. In all the internal secretion must have been distributed to the body in excess at the time of the operation. This must have been due to the manipulation of the gland forcing the internal secretion into the lymphatic spaces, although, as far as possible, this is reduced to a minimum by retracting the surrounding structures away from the gland and touching it as little as possible with the hand. Another cause must be escape of the internal secretion directly into the wound when the isthmus is divided. To limit this as far as may be, the isthmus is, when possible, crushed in a clamp, ligatured and divided, and the wound is rapidly washed out with hot normal saline to limit the amount of internal secretion left in it. If the isthmus is thick and fleshy, the application of the crushing clamp itself must force an undue amount of internal secretion into the surrounding lymphatic spaces. I have noticed that post-operative hyperthyroidism has not occurred in patients whose thyroids contained enormously dilated acini, but rather in those firm, fleshy glands in which the acini are only moderately distended with colloid; these patients are usually young people—that is to say, post-operative hyperthyroidism is most likely to occur in the actively secreting glands of moderate size, and not in the parenchymatous glands which are enormous and whose contained colloid is more a sign of degeneration than active secretion. I know that certain patients with cystic goître, when the cyst has ruptured during operation, have exhibited signs of post-operative hyperthyroidism, but as a rule no such manifestation occurs. Enough has been said to warrant the belief that the colloid is the vehicle which contains the active internal secretion, and this may be present in a larger or smaller amount, but the quantity of colloid substance present is no indication of its physiological value.

THE OPERATION.

A sandbag is placed under the neck. The anaesthetist is shut off from the operation area behind a sterilized sheet held over two upright iron supports. The sheet is continued over the body, and there is a slit in it which comes over the goître, the edges of which can be clipped to the skin incision. In parenchymatous goître the incision should be transverse. The resulting scar is excellent, and can be concealed by a strip of velvet or a necklace. None of my patients have been dissatisfied with the cosmetic result. The anterior borders of the sterno-mastoids should be well defined to permit of easy retraction. The infrahyoid muscles and the layer of fascia covering them are divided close to the hyoid bone and dissected off the front of the gland. In this way the nerve supply is not interfered with, and the line of suture at the end of the operation does not coincide with the skin incision. All bleeding is now carefully stopped. The upper pole of the lobe to be removed is cleared first, and the superior thyroid artery and vein clamped between two pairs of forceps and divided, and then tied off in one ligature. In some of my earlier cases I tied the superior thyroid vessels with an aneurysm needle and then divided them. But since the ligature with which the artery was tied once slipped off when I was dividing it, I have given up the aneurysm needle. The next step is to tie the middle thyroid vein, and in doing so to free the outer border of the gland. Then the upper border of the isthmus and the pyramidal lobe is cleared, and then the lower border of the isthmus is defined. The inferior thyroid vein is tied at this stage, and the thyroidea ima if present. The isthmus having been defined is crushed up in a clamp, one blade of which is carefully passed between the trachea and isthmus. The crushed portion is easily tied and divided; if any colloid escapes at this time into the wound it is washed out at once with hot sterile saline solution.

The half gland can now be held downwards and forward, and the attachment is the inferior lateral ligament and inferior thyroid artery. This is the most anxious part of the operation. The artery is in such close relationship to the recurrent laryngeal nerve that several methods have been adopted to protect the latter. Careful isolation of the nerve has been performed, but in one case in which I did this the patient suffered from recurrent laryngeal palsy which did not clear up for several weeks after operation. Another method is to cut obliquely into the tissue of the gland itself and to pick up the points of the inferior thyroid artery inside the capsule. In this way the nerve is not seen and the bleeding arrested easily, but unless the assistant is very careful not to allow the ends of his forceps do more than seize each bleeding point, I conceive it possible that the nerve might be nipped up and included in a ligature just the same. I now prefer to hold the gland well out of the wound, and, cutting absolutely on to the capsule itself, pick up the branches of the artery just as they penetrate the capsule. By this means I often see the nerve, but do not disturb it with instruments, and so have never had any traumatic neuritis. The gland being now free is lifted out of the wound, a hole is made at the lower end of the musculo-fascial sheet, a drainage tube inserted, and the muscles and fascia sutured where divided, the sandbag under the neck being removed at this point and the head raised by the anaesthetist. The skin is now sutured with interrupted finest silkworm gut, the glass drainage tube is left projecting, and the wound carefully dressed with sterile gauze, wool, and bandage. The patient is propped upright in bed, with bed-rest and pillows carefully supporting the head. The wound is dressed in twenty-four hours and the tube removed. The patient is allowed out of bed on the fourth day. Stitches are removed on the sixth or seventh, and a collodion and gauze dressing applied.

Single adenomata may often be shelled out easily, and sometimes multiple ones also by cutting into the gland capsule and dividing the gland substance until the adenoma is reached. But it often happens, if many adenoma are present, that a hemi-extirpation is the only practicable operation possible.

The immediate results of thyroid operations are excellent; healing by first intention is practically always obtained. Amongst nearly forty cases that I have had in hospital and private practice, there has been one case of suppuration, and that occurred after the wound had apparently healed, being due to a spreading infection from the site of the tube.

REFERENCES.
[1] *Physiological Journal*, 1907. [2] BRITISH MEDICAL JOURNAL, 1907.

THE late Mr. J. A. D. Shipley, solicitor, of Newcastle-on-Tyne, has directed that after the payment of certain legacies his residuary estate, estimated at £100,000, should be divided amongst various local charities, including the Royal Victoria Infirmary and other medical institutions.

PULMONARY TUBERCULOSIS IN CHILDREN.*

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I HOLD the view that phthisis is one of the most common diseases of childhood, and that among those who die of it at the ages when it causes the highest mortality, the majority have contracted and suffered from the disease in childhood—that is, during the first fifteen years of life.

I am aware that eminent men have frequently and recently expressed opposite views. I know that to venture to express my views is to be called an alarmist; but I consider that in order to abolish the high phthisis death-rate in early adult life it is absolutely essential to admit that the disease has existed in a recognizable condition for years, and, during these years, has been in the highest degree amenable to treatment.

Death and Morbidity Statistics.

Various figures are given as to the number of persons found at autopsies to have tuberculous lesions in the lungs.[1]

Death Statistics, London, 1905.

Estimates vary from 27 to 75 per cent. Let nearly the lowest —30 per cent.—be taken.[2] In 1905 the phthisis death-rate in London was 0.142 per cent. of persons living.

(*a*) Therefore for every 0.142 persons dying of phthisis, 30 suffer from it. This ratio probably holds also for children, and if not, it is too low. The number of children dying of phthisis in London in 1905 at ages 5 to 15 was 176.[3]

(*b*) Therefore the estimated number of children dying of phthisis in London in 1905 at ages 5 to 13 was 92.

(*c*) From (*a*) and (*b*) we find that the number suffering from phthisis corresponding to the 142 dying of it $= 30 \times \frac{142}{0.142} = 30{,}000$.

(*d*) Number of children aged 5 to 13 in London = 694,774. From (*c*) and (*d*) we find that among 694,774 children the number suffering from phthisis = 30,000.

Results of Medical Inspection, London, 1905.

(*e*) The number of children on the rolls in the London schools examined was 165,915. Therefore the probable number suffering from phthisis among these was $\frac{30{,}000}{694{,}744} \times 165{,}915$ = [log. 30,000 + log. 165,915 − log. 694,774] = 7,164—that is, it is probable there were, roughly, 7,164 children suffering from phthisis in the schools examined, and from (*b*) and (*c*) the number of deaths from phthisis = $\frac{142}{694{,}774} \times 165{,}915$ = 34 (approximately).

In the report of this year, 1905, there is no record of the finding of any cases of phthisis, though we have seen that it is probable some 7,000 children were suffering from it in the schools examined.

Death Statistics, London, 1906.

The alteration in percentage death-rate from phthisis in London between 1905 and 1906 was 0.002.[4] The number of deaths from phthisis between 5 and 15 was (74 + 82) 156, instead of 176 in 1905.[5] Considering the ages 5 to 13, this number would be 123. Hence there was no material alteration in the number of deaths.

Results of Medical Inspection, London, 1906.

In the schools examined this year there were on the rolls 208,874 children, and there was again no record of cases of phthisis.[6]

In an examination undertaken in a few schools with special reference to phthisis, a few cases were recorded, reaching the percentage of 0.5.[7]

But if 123, according to the Medical Officer of Health for London's returns for 1906, died of phthisis among the 694,774 children in London, there must have been, roughly, 36 school children who died of it, and some 7,605 children suffering from it, among the schools examined.

These calculations are based on nearly the lowest set of figures obtainable. We can only suppose that these 7,000 children were all suffering from it in a so-called latent stage; or, in plain language, in a stage not sufficiently advanced for those particular observers to detect it.

We are thus met at the outset with a startling fact. Some 200,000 children were on the rolls in the schools examined, and were inspected by certain members of the staff of twenty-five doctors. It is true that the examinations were not as systematic as is demanded now, but a fair number were cases of delicate children picked out by the teacher, or the doctor, for ill health, and hence were more likely to have been suffering from phthisis than if the work had been purely routine—that is, only among non-selected cases. It has been contended that there were no cases of phthisis in those schools because they had been drafted into the "invalid schools." There is no record in 1905 of such a drafting in the report of those invalid schools; and if they had been so drafted there would have been some mention of the examinations in the ordinary schools, when the fact that they suffered from phthisis was detected. According to the figures I have just given it is obvious that there *must* have been children examined in every stage of phthisis, except the late stages, and that the examining doctors failed to detect the disease. What happened in London is sure to have happened elsewhere.

In a leader on the subject in the BRITISH MEDICAL JOURNAL of February 9th, 1907, is the following passage:

> It is a curious fact that no cases of pulmonary tuberculosis, or of predisposition to pulmonary tuberculosis, are noted in the London elementary schools. In France a large number of children, ranging from 2 years to the end of school age, are received into sanatoriums for children, either predisposed to or suffering acutely from tuberculosis. How is it, then, that in England, where such a large number of deaths occur from phthisis, no notice is taken of the disease until after school age? It is in the highest degree improbable that the true condition here differs so essentially from that existing in France, and a careful inquiry into the matter would be of the very greatest interest.

In 1906[8] the presence of sixteen phthisical children is reported in the invalid schools.[9]

Dr. Newsholme quotes the following figures as obtained by various observers to indicate the amount of phthisis in our school children.[10]

	Number of Children Examined.	Percentage with Phthisis.
Drs. Lecky and Horton (Brighton)	806	0.37
Dr. Mackenzie (Edinburgh)	600	2.3
C. O. S. (Edinburgh)	1,318	1.4
Professor Hay (Aberdeen)	600	0.5

Dr. Greenwood, in Blackburn, among 1,028 children, gives 6.7 per cent.[11]

The late Dr. Grancher, of Paris, in a most careful paper on the subject, found the percentage among 4,226 children to be 15.[12]

Dr. Hyslop Thomson reports from Glasgow that among 779 patients seen for chest complaints in hospital there were 43 children under 16 with phthisis.

Proportion of Tuberculosis Found Post Mortem in Children Dying of Various Diseases.

With tuberculous lesions in any organ, Harbitz[13] of Christiania, among children under 15, found 42.5 per cent.

Comby,[14] of Paris, gives for children aged 2 to 10, the percentage 67, and for the ages 10 to 16 the percentage 64.

Nägeli,[15] of Zurich, has furnished a series of figures, which are frequently quoted. For children under 18 his series gives a percentage of 17. But he explains that this figure is much too low, as for various administrative reasons children with tuberculosis are commonly refused admission to the hospital at which the necropsies were made.

The most complete table I have been able to obtain is that drawn up by Hamburger and Sluka,[16] who give their own results and also the figures obtained by other observers. A most careful bibliography is given at the end of the paper.

Author.	Age of Children.	Number of Necropsies	Number of Tuberculous.	Tuberculous per cent.
Müller	0-15	500	209	46
Baginsky	?	806	144	18
Orth	0-15	418	47	11
Nägeli	0-15	88	15	17
Burchhardt	0-15	190	72	40
Ancell	0-15	154	42	28
Hamburger and Sluka ...	0-14	401	160	40

* Read in part before the Worcestershire and Herefordshire Branch of the British Medical Association, and in part before the Association of Registered Medical Women, London.

Further information is given for special ages (1) by Müller,[17] (2) by the authors:

Age.	Number found Tuberculous.	
	1. Per cent.	2. Per cent.
5-6	50	60
7-10	40	64
11-14	75	77

Hamburger and Sluka[18] also state that among 100 children dying in a hospital in Vienna, of various diseases, 40 had tuberculosis, recognizable by macroscopic examination. This number would, of course, be much higher if microscopic examination had been made. These Austrian figures probably fairly represent English ones—for it has been shown that the death-rate in London was 142 per million, while for Austria in 1901 it was 144.[19]

Ganghofner[20] has given figures for 1,800 autopsies on children who during life had not been recognized as suffering from tuberculosis:

271 deaths, ages 4-6, percentage with tubercle = 26.9.
123 deaths, ages 6-8, percentage with tubercle = 26.8.

It is very difficult to obtain figures as to the numbers in whom tubercle was found in the lungs, and we can only consider approximate figures.

Hamburger[21] gives 63 cases of pulmonary tuberculosis in 160 cases of tuberculosis. Nägeli states that of his cases nine-fifteenths showed lesions in the lungs.

Dr. Newsholme[22] estimates that among deaths due to tuberculosis the proportion due to phthisis is 69.5 per cent. Professor Osler[23] quotes Müller to the effect that, in children, the lungs are involved in 92 per cent. of tuberculous infection. This was the percentage at autopsies at the Munich Pathological Institute.

We may note here that Baginsky, in 933 autopsies in children with tuberculosis, could find no case in which the lungs only were infected, indicating that primary lung tuberculosis is rare in children.[24]

We thus see that statistics from autopsies support the contention that tuberculosis of the lungs is a common disease in children.

There is a serious discrepancy between the figures for tubercle of the lungs in the dead, and the highest figure we have been able to find for recorded English observations in the living, that given by Dr. Greenwood, 6.7 per cent. Apparently observers class the undiscovered cases as "latent," but I can hardly believe we are willing to admit we cannot do something better at diagnosis than this.

Probable Age of Infection.

Professor Behring has said: "The bacilli which gain access to the alimentary tract in infancy constitute the important etiological factor in the production of the tuberculous infection which leads to consumption."[25] With this statement I agree, and I believe that the great majority of the cases of consumption, especially those who die between 15 and 35, were infected in early childhood, and have had tuberculous lesions in the lungs for periods varying from five to twenty years.

In a recent most able paper read by Dr. Newsholme before the Epidemiological Society, he altogether differs from Professor Behring, and in support of his view he adduces statistics relating to the ratio between deaths from phthisis and the infantile mortality in various countries.

His argument is that tuberculous infection from cow's milk must take place mainly in those districts or countries where the greatest amount of artificial feeding takes place. This appears reasonable, except in so far as we need not limit the period of probable infection to the first year of life; I would extend it in a lessening rate through the years of childhood. The best gauge of the amount of artificial feeding is admittedly the infantile mortality-rate. So far, in the main, I agree. But then, Dr. Newsholme continues, if the liability to the infection and the infant mortality are both greatest under the same circumstances—that is, when there is much artificial feeding—then the infant mortality-rate and the phthisis-rate should show a definite correspondence in the various towns and countries. But he states "there is an utter absence of correspondence," and in support of this statement he gives statistics. Hence he deduces that Professor Behring's theory of the frequency of infantile tuberculous infection is in the highest degree improbable.

I disagree entirely with this deduction. If the infantile mortality is high, that means that a large number of the children infected with tuberculosis by cow's milk die in early infancy. Probably the majority of those seriously infected die. These deaths will be certified as due to every disease of which babies may die, and will not materially raise the phthisis-rate.

Surely it is obvious that, according to this view, there will be left, in such areas, a much smaller proportion of children than usual with tuberculous infection, and hence a high infantile mortality will produce a *low* phthisis death-rate. And this view is confirmed by the actual statistics given by Dr. Newsholme.[26]

	Phthisis-Rate.	Infantile Mortality-Rate.
England and Wales ...	1.23	139
Belgium	1.25	147
Scotland	1.53	123
Ireland	2.15	99
Norway...	2.02	86
Sweden...	2.92	96

Dr. Newsholme also argues against this view (that of frequent tubercle of the lungs in childhood), because the phthisis death-rate has declined greatly in the last forty years, and he states there has been no corresponding improvement in the condition of the dairies. This is not a very convincing argument; many of us think there is a very appreciable increase in the trouble taken to obtain germ-free milk. We still use milk which is a disgrace to civilization—but we used to use milk which was a disgrace to barbarism. We take a certain amount of care now in regard to the milk after it has left the hands of the milkers, and we sometimes endeavour to destroy the tubercle bacilli, though we still do little to prevent their obtaining entrance to the milk.

Now let us see whether my view finds support, or the reverse, from other statistics given by Dr. Newsholme[27]—namely, the varying death-rates from phthisis for the two sexes at different age periods.

Ratio of Male to Female Death-rate at each Age Period. That of Females at each Age Period = 100.

Age Period.	Urban Counties.	Rural Counties.
0	117	117
5	58	46
15	107	92
25	134	121
35	160	131
45	224	166
55	241	163
65	223	164
All ages	150	116

The main fact is that in childhood, from 5 years to 15 in the towns and somewhat longer in the country, there is some factor which keeps the male phthisis death-rate below the female; and conversely, as the boy reaches manhood, there is some factor which causes the male phthisis death-rate to be higher than the female.

In early childhood, as babies, boys and girls are treated very much alike. As children there is a distinct difference. From 5 to 15 is the boy's "good time." His comfort is considered before his sister's, and he himself succeeds in assisting to maintain this desirable state of things. He is regarded as needing the best food, and out of school hours he is out of doors playing. The girl is all too frequently

indoors nursing the baby or helping in the house. If the boy and girl are both infected with pulmonary tuberculosis, which has the best chance of keeping in good health? The boy undoubtedly. Hence during boyhood the male phthisis death-rate will be lower than the female.

In the country this state of things will probably continue in the boy's favour longer than in the town, for, if the boy begin work at 12 or 13, in the country it will probably be out-of-door work. In the towns circumstances will be less in his favour, and this fact is borne out by the phthisis death-rate.

As the children reach adult life the factors in favour of the boy cease to operate; the male is the breadwinner, and the stress of work falls on him. Suppose, again, both the boy and girl infected; throughout his boyhood circumstances have been favourable to the boy, he has held his own in the fight against the bacilli. But once let such a boy be exposed to the stress of work, with the many influences so aptly described by Dr. Newsholme as "urbanization," and the apparently latent infection will take effect; the young man will succumb. No such immense change in circumstances takes place as a girl reaches womanhood, and hence the phthisis death-rate among the young women is then less than among the males.

The second factor operating to maintain this inequality is the larger number among the girls who have succumbed to tuberculous infection in childhood. A smaller number of infected are left alive in early adult life among the females than among the males.

Urbanization.

The discrepancy between the phthisis death-rate of men and women is much higher in the towns, and this is what one would expect, for the urbanization would have more effect on the men than women. But as the effects of urbanization would take some considerable time to act detrimentally, it is reasonable to consider that the effect would be greatest in later years, and hence would produce its chief effect on the death-rates at a period when our two previous factors have nearly ceased to act.

Methods of Tuberculous Infection.

A few years ago we believed that in infancy infection was by the alimentary tract, and that inhalation infection was unimportant. We believed that children suffered from tuberculosis mainly in the alimentary, glandular, and osseous symptoms. In regard to adults, the idea was that infection was mainly by inhalation, and that the phthisis, which causes the appalling death-rates from 15 onwards, was a disease originating in the lungs. So far as experimental evidence in animals went, there was nothing directly to contradict these views.

The most important points in recent work on this subject were very clearly recorded, with most careful references, by Sir William Whitla in the BRITISH MEDICAL JOURNAL of July 11th, 1908. He considers that the following points are proved:

1. That the bovine type of bacilli is found in human tubercle, the great majority occurring in intestinal or mesenteric disease.

2. That the bacilli can pass through the mesenteric glands without leaving any trace, thus disproving the widely accepted belief that, if no abdominal lesions are found in cases of phthisis, it is proof that infection was not via the alimentary tract.

Hence we cannot accept figures, such as Dr. Still's, based on the older theory.

3. "That in the immense majority of cases tuberculosis is not contracted by inhalation, but by the ingestion of bacilli or bacilliferous products by way of the intestinal mucosa." (Calmette.)

No one who has read the paper alluded to can doubt that, very shortly, this last contention will be an axiom.

The common route of infection appears to be the intestinal mucosa—not the stomach—by way of the lacteals or lymphatics to the mesenteric glands, thence (either free or in phagocytes) into the thoracic duct, to the venous circulation, and thence to the lungs. The deep cervical glands share in this infection, and this is of importance as explaining some of the cases of cervical adenitis in which no local lesion can be detected, and as suggesting that in many cases, when there are tuberculous glands in the neck, their infection is a later event than that of the lungs, and has occurred by the same route.

As bearing on this question as to when the disease is acquired, I may quote the opinion of the Royal Commission of 1894, that: "No doubt the largest part of the tuberculosis which man obtains through his food is by means of milk containing tuberculous matter." And Dr. S. Martin says "that the milk of cows with tubercle of the udder preserves a virulence which can only be described as extraordinary."

The work reported by Sir William Whitla indicates that the chief track of tubercle infection is by the alimentary system. The commissioners insist that milk is the most common article of infected food. Undoubtedly milk is more used as a food by children than by adults, and hence this line of reasoning leads back to my original contention—that the greater part of the phthisis existing in adults starts in young children. Further, von Behring, and also more recent observers, have shown that the greatest permeability of the intestinal mucosa exists in early childhood, and, hence, that it is at this period that tuberculous infection of the lung is most liable to take place.

It is no doubt probable that a certain amount of infective material is first inhaled into the mouth and pharynx and then swallowed. This source of infection is open to children and adults alike, with again, however, a reservation in favour of its more common action in childhood, for the reason that it is in childhood that we find the greatest amount of mouth breathing, and in early childhood that we find the greatest tendency to place in the mouth articles other than food which may have become infected with tuberculous dust.

Dr. Newsholme puts forward the view that segregation of consumptives, particularly of the advanced cases, has been the most important item in the various changes which have brought about a decrease in the death-rate from phthisis.

I venture to suggest another change which has worked in the same direction—namely, since the beginning of compulsory education, the taking of the children out of their homes, for five hours a day, into the schools. The homes are the places where the most infection must exist for they are the places where the last stages of a consumptive's life are passed. In school there are rarely cases of advanced consumption.

But, though the present conditions are an improvement much may still be done in the same direction. There are phthisical children in school and phthisical teachers, and whenever these have coughs they may be a source of danger. Dr. Tatham has found a specially high phthisis-rate among teachers. Heyman[28] has shown that in coughing tubercle bacilli are given off, and were collected by him on Petri dishes in 70 per cent. of the experiments. Cadéac[29] has shown that the bacilli contained in these "droplets" of phthisis sputum are highly virulent. And, though we may not consider there is much danger of their being inhaled directly into the lungs, yet it is undoubtedly possible that the other method of infection mentioned may occur. Hence it is important that all phthisical children who cough in the day time should be excluded from school. In Denmark no teacher is admitted to the elementary schools without a thorough examination to exclude phthisis, and this is an excellent example for us.

Dr. Bulstrode, in his *Report on Sanatoria*, states that there is one subject on which opinion and evidence are alike—namely, the overwhelming importance of the early diagnosis of the disease, and he quotes Dr. Latham, "That the early diagnosis of pulmonary consumption is a question of supreme importance, perhaps the most important which the physician has to face." Again and again the point is urged that the patients in the sanatoriums die because they are sent too late. Hence we are brought back to the importance of the question as to what extent phthisis exists in children.

I am aware that there is a certain number of physicians who say that they will not admit any case to be phthisis until and unless they find bacilli. I have so little sympathy with such a death-dealing view that I can only quote the words of a man whose authority most will acknowledge. Professor Grancher said:

To wait for the presence of tubercle bacilli—that is to say, to wait for the presence of cavities in the lung—is to do an immense injury to the patient, to render incurable or very difficult of cure a tuberculous infection which would have been curable in an earlier stage.

I well remember the two cases, both of close personal friends, which impressed this view upon myself. In the one case we hunted twenty-one times for the bacilli, over a period of two years, before we found them, and then the disease had advanced so far it required years to arrest it; and in the other case we examined twenty-seven specimens, and only demonstrated the disease to an unbelieving family doctor at a stage when it had become hopeless.

There is a widespread belief concerning phthisis which is extremely mischievous—that it is a disease which tends to a fatal termination in a period of less than five years. It is an extremely chronic disease, frequently starting and recognizable in childhood, and tending in the majority of cases to recovery.

Dr. Newsholme, to a certain extent, admits this view, for he says that "in notified cases of phthisis the infection very commonly dates back ten to twenty or even more years." If this statement only applies to the elderly among his phthisis cases, it has no bearing on my point. But if he admits the same statement for cases which are notified at ages of 20 to 30, then it would point to the infection having occurred in childhood.

So far I have tried to consider how far evidence, from widely different sources, supports the view I have put before you. Now, only shortly, I venture to lay before you my own experience on the subject. I started examining school children with two ideas on this subject:

1. That most authorities reported that phthisis is very rare among school children, but did not produce any statistics by men whom I could ascertain to have had special experience in diagnosing the disease in adults.
2. That over and over again while living abroad at phthisis stations, patients used to come to me, too late for cure, stating that they had been under their own doctor for years, and that they had started abroad directly he admitted that they had phthisis.

Gradually it began to dawn on me that there was some connexion between these two ideas. Then came the London statistics, a record of work in London among children, which contained no mention of cases of early phthisis, while the mortality returns showed that they must exist in large numbers. I began to consider whether the statements as to the infrequency of phthisis among school children was due, not to its rarity, but to the rarity of doctors who diagnose it.

When we want an opinion on a case of eye disease we consult an oculist. So with various other specialities, and I believe that the diagnosis of early phthisis is just as specialized a work. The cases of early phthisis do not commonly attend the hospitals complaining of lung symptoms, but of a hundred other trivial ailments. The temporary weakness is treated and the lungs are not examined. Hence students leave hospital with an idea of phthisis gathered from the advanced cases in the wards. Naturally we fail to detect cases early, and say we are not sure until we find bacilli.

The figures I have obtained from the children I have examined are, I believe, still too low (see table).

The most valuable figure I consider to be the percentage for the routine cases, town and country—namely, 14·3. The figure for all cases is somewhat higher, namely, 15.4 per cent., and for the selected cases is naturally still higher, namely, 17.9 per cent. In many cases the numbers dealt with are so low as to render the results almost valueless. My figure for all cases, 15.4 per cent., is almost the same as that given by Dr. Grancher.

I am told that some of my cases of phthisis are chronic bronchitis. Professor Osler says: "The frequency of bronchitis prior to recognized lung tubercle cannot be regarded as causative, rather is it symptomatic of existing tuberculosis."[30] I think one difficulty has arisen from the fact that, so commonly, bronchitis is a symptom, and yet our textbooks classify it as a disease. I have studied four textbooks on this subject recently, and so far as the point is alluded to at all, it is evident that bronchitis is used to indicate the pathological condition, quite apart from the etiology; the result is that the bronchitis, which is a mere symptom of phthisis, is spoken of as if it were the main disease.

I believe that a chronic non-tuberculous bronchitis is rare between the ages of 5 and 50, unless due to heart disease, Bright's disease, or some other definite pathological entity, and is extremely rare in comparison with phthisis. Dr. Sutherland, in his recent book on *Treatment of Diseases in Children*, does not give a chapter to "chronic bronchitis"; apparently he agrees that it is a disease of the aged. He regards an intermittent bronchitis as a common complication of fibroid phthisis; he speaks of the chronic bronchitis of young children due to rickets, but the usual chapter on chronic non-tuberculous bronchitis is absent.

Table showing Results of Examination of Children in Town and Country Schools.

Routine means that the children were taken as they chanced to occur at the given age. *Selected* means that they were those picked out for some sign of ill-health, either by the teacher or myself. This group included many cases picked out only for defective eyesight, vermin, etc.

Routine or Selected.	Sex.	Age Period.	Number Examined.	Number with Phthisis.	Percentage with Phthisis.	Town or Country.
Routine ...	Male	3-6	41	3	7.3	Country.
,,	,,	12-14	97	17	17.5	
Selected ...	,,	6-12	56	9	16 1	
Routine ...	Female	3-6	55	7	12.7	
,,	,,	12-14	244	28	11 5	
Selected ...	,,	6-12	139	21	15.1	
Routine ...	Male	3-6	55	4	7.3	Town.
,,	,,	12-14	44	6	13.6	
Selected ...	,,	6-12	29	5	17.2	
Routine ...	Female	3-6	79	5	6.3	
,,	,,	12-14	315	63	20.0	
Selected ...	,,	6-12	155	33	21.3	
All cases...	Male	All ages	194	29	14.9	Country.
,,	,,	,,	128	15	11.7	Town.
,,	Female	,,	438	56	12 8	Country.
,,	,,	,,	549	101	18.4	Town.
All cases...	Both sexes	All ages	632	85	13.4	Country.
,,	,,	,,	677	116	17.1	Town.
All cases...	Both sexes	All ages	1,309	201	15.4	Town and country.
Routine ...	Both sexes	(3-6) (12-14)	437	55	12.6	Country.
,,	,,	,,	493	78	15.8	Town.
Routine ...	Both sexes	(3-6) (12-14)	930	133	14.3	Town and country.
Selected ...	Both sexes	6-12	195	30	15.4	Country.
,,	,,	,,	184	38	20.7	Town.
Selected ...	Both sexes	6-12	379	68	17.9	Town and country.

A child with tuberculous infection in the lungs is by no means necessarily what people mean by "consumptive." In the majority of cases I believe the disease tends naturally to cure, and that, when this is not so, it is on account of one of the following reasons:

1. That the child started life with a hereditary predisposition to the disease, which must be counteracted by special treatment.
2. That the child has been subjected, or is continually being subjected, to so severe an infection that its vital forces are beaten at the outset.
3. That the circumstances of its life are unfavourable.

These three possibilities render it imperative that we should find out which children are already infected, in order that we may counteract any hereditary tendency and alter any adverse circumstances.

Phthisis is not a disease which requires combating chiefly on account of its fatal tendencies, but because it is a disease creating our army of "ineffectives," the people

who are prevented by chronic ill-health from doing effective work. Again, it is a disease to be fought because so many of our children with the best brains are attacked by it. If ever a teacher says to me that such and such a boy is the sharpest in the school, I always notice the lungs with extra care.

Early Symptoms and Signs.

The following remarks do not refer to cases in an advanced stage, children definitely ill, nor need I allude to the classical types of the tuberculous.

Night sweating is a symptom concerning which one of my colleagues has no faith. He says that they all say they sweat. That seems to me only saying that "all men are liars," and needs qualification. There are certain distinctions to be made:

1. If the sweating has existed all the child's life, it is probable the original cause was rickets. If it has started recently, or has existed in infancy, stopped, and started again, it has weight.
2. If the sweating is not constant, but occurs from time to time, whenever the child catches cold (of course excluding the results of hot drinks at night).
3. The sweating must be on the forehead or round the neck. It may be elsewhere as well, but, if the forehead is always dry, I am sceptical.
4. The sweating must be worse in cold weather.
5. Must not be due to heavy bedclothes.

If these five conditions are present, sweating at night in children over 5 is mainly due to tuberculosis.

Morning Anorexia.—The second symptom of importance is eating no breakfast. You doubtless remember the eminent man (was it Sir A. Clark?) who said that if a man over 40 ate a good breakfast he would pass him for life insurance. There are few children with active phthisis who willingly and regularly eat a good breakfast.

Fatigue.—The third symptom is that they tire easily. They may forget the tiredness in excitement, but, if so, they collapse afterwards. Many of my cases of phthisis reach home from school so tired they promptly go to sleep.

Other Symptoms.—Other symptoms are legion. Children with early phthisis are constantly catching cold, have headaches, etc. Cough is a matter of chance, the majority of early cases do not cough in the daytime, hence are not dangerous to others. One symptom, which can only be discovered in a fairly intelligent patient, is pain, pain quite apart from pleurisy, occurring early, over a small lung area. It is a feeling of soreness or dull ache, and appears to indicate inflammation commencing in a new focus.

Loss of weight is most important. We are having our children suspected of phthisis weighed monthly.

Temperature.—I often find a rise even in the morning; but rarely in the fibroid cases.

Auscultatory.—In examining the chest, most of us have some special sign on which we lay weight. Professor Grancher laid great stress on any change in the character of the inspiration as indicating a tuberculous focus. I confess that I have tried, in vain, to feel any certainty in regard to this point. The chief point that I generally try to make out is whether there is any area which sounds unlike the rest; the place of difficulty to me is the right apex, as it is not easy to determine variations from the normal at this spot. Two of the doctors who carried out part of the special work in the London schools speak of certain changes they find as indicating an atelectatic condition of lung. These changes are patchy dullness, tubular breathing, and crepitations. I do not believe such a condition exists beyond infancy, except as a pathological curiosity, and in this view I have the support of Professor Osler.[31] It is common to hear that such and such a sign, such as crepitations at one apex, have no significance, because on the next examination they have cleared up. If there is one thing certain about crepitations due to early phthisis, it is that they may be present one day and not a week later.

THE NATIONAL BALANCE SHEET.

Dr. Newsholme, in his *Prevention of Consumption*, gives most valuable figures. He states that there are 60,000 deaths annually, as well as a heavy financial loss to the country, from phthisis. From the male deaths he estimates that the loss to England and Wales is not far from ten million pounds annually, and that the loss from sickness, or what I have spoken of as the non-efficient workers, comes to one-fifth of the total loss from sickness, and costs one friendly society alone at least half a million sterling in a year.

It is also stated that one-eleventh of the total cost of pauperism in England and Wales is caused by consumption.

This year the country has a unique opportunity to initiate steps to end this fearful loss of lives and money. Whether or no we consider it is easy to diagnose phthisis in children, every one agrees it is important to do it, and also that it is particularly difficult to diagnose in what Dr. Newsholme calls the "latent stage." But in all the demands made by the various education authorities in regard to the qualifications of their medical officers, I have not seen one which has demanded special skill in this branch of work.

And yet this is the disease which takes infinitely the heaviest toll in men and money; and if we are to stamp it out the cheapest time to do it is in childhood, before the sufferer becomes a bread-winner, and while the disease is in an early stage. Dr. Newsholme urges various steps to improve the present appalling state of affairs. First and foremost, I would suggest that the utmost care should be taken to ensure careful examination of the lungs by competent doctors, under the new scheme of medical inspection of children—and that any idea that it is possible to decide by looking at a child whether he needs "inspection" or examination (which is the present idea of the Board of Education) should be absolutely negatived. And then, so soon as we know roughly the number of cases of early phthisis we have to cure, let these children be drafted into open-air schools and cured while cure is easy and inexpensive.

REFERENCES.

[1] Bulstrode, *Report on Sanatoria*, Chapter V. [2] London M.O.H. Report, 1905, p. 49. [3] Loc. cit. [4] Report of M.O.H. (London), 1906, pp. 49 and 50. [5] Ibid. [6] Ibid., Appendix II, p. 5. [7] Ibid., p. 20. [8] Reports of M.O.H. for London (1905), p. 18. In 1906 the presence of sixteen phthisical children is reported in the invalid schools. [9] Report for 1906, p. 50. [10] *Second Internat. Congress on School Hygiene, 1907*, p. 614. [11] Ibid., p. 675. [12] *Congrès Internat. de la Tuberculose*, Tome II, Paris, 1905. [13] *Untersuchungen über Lokalisation der Tuberculose*, pp. 5-99. [14] *Presse Médicale, 1906*. p. 766. [15] *Virchow's Archiv*, B. 160, p. 426 et seq. [16] *Jahrbuch des Kinderheilkunde*, B. 69, 1905, p. 523, [17] Loc. cit., p. 525. [18] Loc. cit., p. 521. [19] *Zeitschrift für Tuberculose*, February, 1901, p. 119. [20] International Congress on Tuberculosis, Paris, 1905. [21] Loc. cit. [22] Newsholme. *Prevention of Consumption*. [23] *Prac. of Med.*, 1894, p. 234. [24] Still (*Pract.* 1901, p. 91). [25] Bulstrode, *On Sanatoria*, p. 22. [26] *Trans. Epidem. Soc*, 1906, p. 68. [27] Newsholme, quoted from Registrar-General's Annual Report, 1903. *Trans. Epidem. Soc*, 1905-6, p. 138. [28] Bulstrode, loc. cit., p. 19. [29] Bulstrode, loc. cit., p. 21. [30] *Practice of Med.*, p. 192. [31] Osler and McCrae, pp. 332.

IODINE IN SURGICAL TUBERCULOUS DISEASE.

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ONE of the most common diseases with which we are confronted in China (as probably also in other countries) is tuberculous disease of joints, bones, glands and skin.

Last summer we had a special number of tuberculous joint cases which either occupied our beds or attended the out-patient department for change of dressing, and it occurred to us to try iodine liniment.

The first case which we seriously undertook to treat by this method was that of a lad with tuberculous disease of the right elbow. As usual, a native doctor had acupunctured the swollen member. Having a poisoned hand myself, I asked my colleague to operate. He excised the joint and removed every vestige of disease. Every possible care and precaution was exercised to secure a good result. After a few weeks, with the usual treatment of iodoform dressings, the condition of the elbow was, as the experience of similar cases had proved us to expect it would be, that it was healed to a certain degree, but with several sinuses persisting. We again put the lad under chloroform and thoroughly scraped the sinuses from which pus was freely discharging. Then we thoroughly swabbed the sinuses with iodine liniment, we did not put in any drainage, but dressed with gauze and wool, replacing the arm upon an augular splint. Two days afterwards we removed the dressings and to our surprise there was not a particle of discharge. Every day after we swabbed the sinuses with iodine liniment, and they healed as though they had been

touched with a magic wand. Before the lad left the hospital he had secured splendid movement. He could write with a Chinese pen and manipulate his chopsticks with celerity.

It is unnecessary to record similar cases or describe the many cases of tuberculous abscesses, ulcerated glands, skin ulcers, etc., which have all entirely healed under this treatment.

Our experience, after over six months' trial, is that, although iodine liniment acts well upon ulcers and sinuses of a mixed infection, the results are not quite so rapid or satisfactory as is its action upon tuberculous disease.

Our *modus operandi* is as follows: We operate or scrape as usual. Then we thoroughly swab the cavity with iodine liniment (*B.P.*). A piece of cotton-wool twisted around the end of a probe forms a good swab, and can be graduated according to the size of the sinus. The liniment is applied *every day*. The application does not cause pain, except a momentary sensation, when applied to some surfaces; neither does it destroy tissues, as does pure carbolic acid. Granulations do not become excessive. At the first application we insert a thin piece of gauze or pack lightly, but never at subsequent dressings. Gauze plugs and strips for drainage have undoubtedly been responsible for many chronic sinuses. From the first we give a mixture internally containing syrup. ferri iodi, 1 drachm, and potassium iodide, 5 grains, thrice a day.

In the case of large phagedaenic ulcers, which form so large a part of our clinics in China, we first of all either scrape or foment, so as to get access to the base of the ulcer. Then the iodine liniment is applied daily. One of the worst cases of this character that we have been called upon recently to treat involved the entire dorsum of the man's foot and toes, exposing the tendons and bones. It was scraped, and iodine liniment used from the first. To-day it has almost completely healed, and without any signs of the usual extensive granulations.

We happened to mention this method of treatment at a medical meeting, since when I have received several letters from those who have tried it. They all report satisfactory results, so I make no apology for publishing it.

So far, we have failed to discover any reference to this special form of treatment in any available medical literature. Perhaps it has been and is still being used by our more enlightened compeers; but to those who are prepared to persevere with this particular form of treatment we can wish them no higher joy or greater satisfaction than up to the present has been our reward.

THE CONTROL OF INFECTIOUS DISEASES IN AND OUT OF THE SCHOOLS.

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One of the most important results of the medical inspection of elementary schools will be probably the more effective control of infectious diseases in a community.

The control of epidemics by public health authorities has been developed on systematic lines until it has reached a high degree of efficiency, but inasmuch as the supervision of the schools has been partial only, it has been possible for an epidemic to gather force before it was dealt with seriously. Not infrequently it is found that over 70 per cent. of cases in an epidemic occur in children who have been attending elementary schools, and this fact makes it most desirable that the school in which the first few cases occurred should be put under as complete supervision as possible.

The spread of diphtheria in schools affords a good example of this. A child sickening for the disease may, whilst still attending the school, infect many of its classmates. Pencils are still used indiscriminately by different children in the same class, and the pencil used one day by a diphtheritic child is put into the common box, and the chances are all in favour of its being used by another child on the following day. Children, especially younger children, are continually putting their pencils into their mouths, and a more favourable condition for the spread of diphtheria cannot be imagined in practice. Whilst investigating the rapid spread of diphtheria in one class of a school, I watched the children for a few minutes. In that short space of time many of the scholars put their pencils into their mouths. I collected all the pencils of the class, made stroke cultures in a few tubes, and the borough bacteriologist reported the presence of the Klebs-Loeffler bacillus in the growth. One diphtheritic child who put a pencil in its mouth would be a potent factor in the spread of the disease among its classmates, and a more powerful stimulus is always given to this spread by the presence in a class, firstly of unrecognized cases of diphtheria ("sore throats"), and secondly of children in whose throats also exists the *Bacillus diphtheriae* (Klebs-Loeffler), and who are sickening for the disease, and able to communicate it to others. In the class mentioned, I took swabs from seven throats, and found the Klebs-Loeffler bacillus in two of the children who were still in the class.

Whatever be the origin of the first case—milk or drains—there is no doubt that the elementary schools play a most important part in the spread of diphtheria, first on account of the overcrowding and bad ventilation which still obtain to a greater or lesser extent in the elementary schools, and secondly on account of the use in common by the children of school materials. Of these, pencils are the most used, but in infants' classes plasticine is also handled in common by the scholars. This modelling material, excellent as it is for kindergarten work, and loved by the children as a substitute for clay, must be regarded as dangerous whenever a case of diphtheria has occurred in a class.

Measures taken to check the spread of infection may be classified as taken: (1) In the school; and (2) outside the school.

In the school itself, it is, of course, necessary to consider the possibility of drain defects as being the first cause of an outbreak, after which attention is given to those conditions whereby the infection is spread from one child to another.

The use in common by the children of school material should be controlled, also the use of drinking cups. The danger from pencils may be done away with by the provision of a small metal pencil box for each child. The box, bearing a small label for the child's name, can be obtained at a cost of one penny, and the children take a pride in seeing that they have their own pencils. When diphtheria has occurred in a class, the use of common materials should be stopped or controlled in a similar way.

The overcrowding in schools, always favourable to the spread of infection, will only gradually be done away with, but the new requirement by the Board of Education of a 9 ft. and 10 ft. basis for infants and older children respectively is a step in the right direction; the gradual replacement of the long desks by dual or even single desks, apart from their advantages in the way of back-support and comfort, and lessening of eye-strain, will aid to some extent the diminution of infection, as also will the routine disinfection of schools.

Not the least important matter to deal with in the schools is the presence in a class of children who have the *B. diphtheriae* in their throats, who are sickening for the disease or are suffering from it in a mild form ("sore throats"), and who are possible sources of infection to other children. And herein the aid of medical inspection to the public health should be at its greatest value.

When a case of diphtheria occurs in an elementary school child the school medical officer visits the class and examines the children's throats. The use of wooden spatulas, one for each child, the spatulas being destroyed after use, is necessary. All cases of sore throats are excluded from the class, swabs being taken at the time. In this way would be removed those children in whom there was diphtheria in a mild and unrecognized form.

By the term "*Bacillus diphtheriae*" is meant the true Klebs-Loeffler bacillus, possessing the accepted cultural and morphological characteristics. The variation in virulence of this true diphtheria bacillus is recognized; but even when the virulence is very low, provided the morphological type and such characteristics as the polar staining with Neisser's method are retained, it is regarded as the true bacillus of diphtheria (Klebs-Loeffler). As such, its presence is a reason for regarding a throat as a means of infection to others. The pseudo-diphtheria bacilli may or may not be convertible into the

true bacillus; the evidence is at present all in favour of this view, but the fact is not proven; and in the practical efforts to check the spread of the disease no more can be done than to obtain some control over those children in whose noses and throats are found the true diphtheria bacilli. This at least is possible in practice, and, inasmuch as such control is based upon facts proven and knowledge certain, it is both desirable and justifiable.

So widespread are the pseudo-diphtheria bacilli so frequently found in the "normal" throat that the control of each child harbouring the Hoffman bacillus in nose or throat is not within the range of practical administration. Even if it were proved beyond doubt that the Hoffman bacillus may become the true type bacillus—and this is possible at any time—it would be necessary still to show that the change occurred frequently or rapidly. If it were so proved, it is to be hoped that some indication and warning will be found more useful and more sure than the vague "lowering of resistance" so often referred to.

This outline has been confined to the methods of control in the school. The sanitation and drainage are found to be perfect, the school premises have been efficiently disinfected, sources of infection such as pencils and other common-use materials have been controlled, cases of suspicious throats have been excluded, and thus a fairly complete check is put on the infection in the school.

But what about the further control of these "sore-throat" children who have been excluded from school? They still remain possible sources of infection outside the school, and it is here that the Public Health and the Medical Inspection services should meet; there should be no gap through which these cases might escape, and, free from control, continue the infection.

The "sore-throat" cases, of which many may be mild diphtheria, recover and return to school, still harbouring the bacilli in their throats and *noses*. When a child is certified to be suffering from diphtheria and is taken to the sanitary hospital, it is not allowed to leave the hospital until two negative swabs have been taken from the nose and throat. The London County Council has an excellent regulation that *during the prevalence of diphtheria* in a district, no children excluded from school on account of diphtheria or *sore throat* may return to school until they have obtained a medical certificate, *based on a bacteriological examination*, that they are free from diphtheria.

The phrase "during the prevalence of diphtheria in a district" gives the key to the situation. A sore throat occurring in a child may or may not be a serious matter, but a sore throat in a child who is in a district where diphtheria is prevalent, and who has been in contact with diphtheria cases, must be regarded seriously. The child is a "contact" case, and it is a most desirable thing that cases of "sore throat" excluded from school should be followed up. Where the medical inspection branch is administered from the Public Health Department this can be done by a health visitor, part of whose duties would consist in visiting and obtaining information concerning these excluded cases. Such a health visitor would be a trained nurse, having experience of fever hospital work, and possessing the Royal Sanitary Institute's certificate for health visitors; and it is a matter of great importance that she should be possessed of such tact and patience as would enable her to carry on her work quietly and unobtrusively and yet thoroughly. A child who had been excluded from school on account of a "sore throat" with the coincident circumstance of being a "contact" case, might or might not have diphtheria. The health visitor, on her visit to the home, explains things to the parents, advising them to consult a doctor, and a form is given to them for the doctor. The following form would be suitable:

Date .....

To the Medical Attendant.

Dear Sir,

I have examined ....., a scholar at the ..... School, and have excluded (him) (her) on account of a condition of Sore Throat.

At the time of exclusion, a throat swab was taken, which on Bacteriological examination gave a {positive / negative} result for the Klebs-Loeffler bacillus.

Yours faithfully,

.....

School Medical Officer.

The medical man whom the parent consulted could then take charge of the case, and, if it was diphtheria, would notify in the ordinary way. By these means these excluded "sore throats," diphtheria or not, would come under medical supervision, they would not be free to continue the spread of the disease.

The methods described for diphtheria would be applicable in a modified form to the cases of scarlet fever, and also, to a slighter extent, to the non-notifiable diseases. There is no doubt that scarlet fever is spread to a great degree in schools by the very slight and unrecognized cases, which are sometimes not noticed at all, and often noticed only when the child begins to peel. The rapid examination of a class in which scarlet fever had occurred would enable the school medical officer to exclude promptly these unrecognized cases. Teachers can be educated to recognize suspicious cases. Sore throats, and even a rash in the case of scarlet fever, weeping eyes and nasal catarrh at the onset of measles, are signs which should enable an intelligent teacher to exclude the child.

The teachers are often able to give information to the medical officer concerning children away from school on account of the non-notifiable infectious diseases. Accurate information concerning the spread of the non-notifiable diseases is difficult to obtain, but a fair indication can be obtained by the system whereby the school attendance officers send a form to the school medical officer. When an attendance officer visiting the home of an absentee finds that the child is suffering from measles, whooping-cough, varicella, or other non-notifiable infectious disease, he fills in a form and posts it to the medical officer. The form is on a card which can be used in a card index system. The disadvantage of this system is that the information may come a few days after the child has fallen ill, but it at least gives information concerning the spread of the non-notifiable diseases; and it can be supplemented by a card sent by the teacher on the occurrence of the *first* case of each disease occurring in the school. This would be early information, and information concerning the first case of an infectious disease occurring in a school is often of great value to the school medical officer in his efforts to check the spread of infection in the schools.

It is probable that as the system of school medical inspection becomes fully developed, the closure of schools on account of epidemics will become less frequent. The leading public health authorities agree that closure of elementary schools is of doubtful value in checking the spread of measles, except in country districts where the school is the one and only meeting place of children. In town, the children meet and mingle in many places and on many occasions. Usually schools are closed only after a large proportion of children have developed measles, and this fact may contribute to the non-success of the measure, but there is one method of closure for measles, recommended by the Local Government Board, which is of particular value in safeguarding the children under 5 years of age. The attendance of these children at school is not compulsory, but large numbers of them are sent to school, and under certain economic conditions, when they cannot be looked after and cared for properly at home, it would be an advantage for these children to attend school *if* the school premises were efficiently ventilated and the general conditions were good, and the young children were allowed to sleep in comfortable positions when they wanted to. Any one who has visited a babies' class in the afternoon will have seen many of the children sleeping with their heads on their desks. The report made to the Board of Education recently by its special committee recommended that for children 3 to 5 years old school nurseries should be provided, isolated from the main building in order to reduce the risk of infection.

But under present conditions something can be done to protect these younger children, to bring them to the age of 5 or 6 without contracting measles—a desirable end, for the measles mortality among children under 5 years old is very great. If early information is obtained concerning the *first* case of measles in an infants' school, the school can be closed from the ninth to the fifteenth day with good effect. The first measles child may have infected others in the school, but those children who have caught measles will not be infectious until about the ninth or tenth day. As the school is closed on the ninth day these children will not spread the disease in the school; also,

all the children who have caught measles from the first case will sicken between the tenth and the fifteenth day—that is, during the time the school is closed. The advantage of the short closure of six days will be apparent to educationalists.

It is evident that full co-operation between the public health and the medical inspector's departments is necessary in order that these methods be carried out thoroughly, and such co-operation will surely lead to the strengthening of the weak points in our defence against the infectious diseases of childhood.

THE MEDICAL ASPECT OF DENTISTRY AND THE NECESSITY OF DENTAL INSTRUCTION FOR MEDICAL STUDENTS.*

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The historical associations between medicine and dentistry date from very early times. Hippocrates, besides studying medicine, devoted some attention to dentistry. He invented forceps for the extraction of teeth, observed the necessity for the proper cleansing of the teeth, and for this purpose prescribed the following dentrifice:

A charmed rabbit's head and three charmed mice ground into a powder.

He also recognized the fact that destruction of the bone of the jaws might follow affections of the teeth—and might even end fatally. Celsus also practised dentistry, and in his *Re de Medica* he advocates filling carious teeth with pieces of slate wrapped in cotton. Galen differentiated between inflammation of the pulps of teeth and inflammation of the root membrane, and prescribed a number of tooth-powders and mouth washes. To come down to more modern times, that famous surgeon, Ambroise Paré, in the sixteenth century devoted considerable attention to the treatment of teeth, and invented a splint for holding loose teeth in position, as well as several forms of forceps. The great John Hunter did not omit the teeth in his multifarious researches, and wrote a most accurate treatise upon the *Natural History of the Human Teeth*. But here comes a hiatus. Since the time of John Hunter until quite recent times medical practitioners have taken but little interest in dental diseases, probably because dental practitioners began to spring up and the matter was left to them, but also, alas! I am afraid, because the practice of dentistry was associated for a long time with a certain element of shamefacedness, if not of quackery, and medical men passed it by on the other side. This position is now, however, no longer tenable, because it is now recognized that dental, medical, and surgical diseases are so intimately related that a proper conception and therefore treatment of one is impossible without some knowledge of the other. In order to substantiate the statement I will proceed to give definite instances of the intimate cause and relationship existing between dental and medical lesions.

Quite a lengthy list of ailments, from appendicitis to glaucoma, have been ascribed to the direct or indirect influence of the teeth, but I shall confine myself to those which have been well established, and in which I can to some extent speak from personal experience. These may be classified as being due to:

(1) Reflex irritation;
(2) Direct extension of morbid process; or
(3) Septic absorption.

Lesions due to Reflex Irritation.

Epilepsy.—Attacks of this disease are undoubtedly set up by peripheral irritation, not the least of which is dental caries; many cases have been reported, and one case is recorded in which the patient always developed an attack of *petit mal* when visiting his dentist. I have had one definite case in which the patient, a little girl, did not show any marked improvement despite excellent medical treatment until her teeth were treated. The attacks then subsided. Some twelve months afterwards a recurrence of dental pain in another tooth was followed by a further attack of epilepsy, and this did not recur after the tooth was filled. Hysteria has also been said to be due to dental irritation, but I am more inclined to think that odontalgia is more usually a symptom of hysteria.

Neuralgia.—Neuralgia of the fifth nerve and tic douloureux are too often associated with dental troubles to need any verification. Brachial neuralgia may be due to irritation arising from the teeth. I have myself seen three such cases. In all three the pain was confined to the region of the circumflex and cutaneous branch of the musculo-spiral nerves. It was associated with exposed pulps in lower premolars, twice on the right side and once on the left; in each case pain started in the tooth, and then leaving the tooth became as it were transferred to the shoulder and arm, and only yielded to the devitalization of the affected dental pulps. In one case the pain ceased within half an hour of treatment, despite the fact that the patient had been unable to sleep all night on account of the pain in the shoulder. A considerable number of cases have been recorded of facial paralysis due to dental lesions; this in many cases is undoubtedly due to the close association between the fifth and seventh nerve through Meckel's, the otic, and submaxillary ganglia.

"*Spurious*" *Tetanus.*—Many cases of this condition, which is quite common, were formerly supposed to be due to the teeth. It is now known as trismus, and in some cases may be due to irritation of the branch of the fifth nerve supplying the masseter, but is more frequently due to a local cellulitis about the angle of the mandible caused by the suppuration at the apex of a lower third molar.

Cardiac Irregularity.—Sir R. Douglas Powell[1] records a case of "excessive" cardiac irregularity and spasmodic heart pains "which a course of Nauheim baths and resistance exercises only slightly relieved," but was completely cured by attention to the teeth, which were "extensively decayed and surrounded by tartar."

Pelvic Pain, etc.—Instances of leucorrhoea and uterine pain synchronizing with dental pain and ceasing on the removal of the tooth have been recorded. Conversely, dental pain is often associated with uterine disturbance; several such cases have come under my notice, one quite recently, in which the severe dental pain occurred every month at the menstrual period in quite healthy teeth (second upper molars), and was not relieved by any dental treatment, not even by extraction, but was "transferred" to the first molars.

Ear Disorders.—Affections of the ear are frequently associated with dental irritation. Neuralgia of the ear is very frequently merely referred pain from a carious tooth; many of us must have had subjective experience of this, especially if we have had the misfortune to bite suddenly upon an exposed pulp. Hilton, in *Rest and Pain*, mentions a case of persistent purulent discharge from one ear which only yielded to treatment after removal of a carious molar, and he suggests that "the reflex irritation had led to interference with nutritive function of the nerves supplying the external meatus."

Eye Disorders.—This interference with the neurotrophic function is undoubtedly present in many obstinate cases of conjunctivitis; I have seen several such cases. Many cases of spasm and paresis of the ocular muscles have been recorded as being due to dental irritation.

Local Cellulitis.—Among diseases due to direct extension of the morbid condition of the teeth may be mentioned cellulitis of the face and neck, of which I have seen two fatal cases, one in a man aged 40, another in a woman aged 35, both arising from lower third molars. In another similar case the patient barely escaped with his life owing to the exceedingly high temperature, septic absorption, and inability to take sufficient nourishment on account of the severe trismus present. I remember Mr. Levason, with whom I was associated for some years, treating a case in which an abscess arising from a mandibular molar had tracked down beneath the cervical fascia, and was eventually opened in the axilla. Empyema of the antrum occurring through dental infection is too well known to need any verification. The *Streptothrix actinomyces* occasionally finds a way into the jawbone through

*Read at the Otago Section, New Zealand Branch, of the British Medical Association. For many references in this paper I am indebted to Messrs. Smale and Colyer's excellent work on *Diseases and Injuries of the Teeth*, chapter xix of which I would suggest might be published as a separate pamphlet for the use of medical students.

a carious and septic tooth, and gives rise to the characteristic "lumpy jaw." One such case which I saw gave rise to considerable difficulty in treatment, having been treated for cellulitis, alveolar abscess, and non-eruption of the third molar, until I was fortunate enough to find the organism.

Myeloid sarcoma frequently originates from the fragment of a buried root. Mr. Jordan Lloyd is a firm believer in this, and I have on two occasions seen him find the bit of tooth which caused the growth; and to satisfy him I made sections of the fragment to verify its dental structure.

Epithelioma.—It is common knowledge to all how epithelioma of the jaw or tongue may follow irritation from a rough tooth. But there are cases of burrowing epithelioma of the jaws which I believe arise from the irritation (by a septic tooth) of embryological remains of the epiblast, which are nearly always present—and known as the epithelial sheath of Hertwig—in the periodontal membrane. Many cases of ulcerative stomatitis, which may develop into cancrum oris, unquestionably arise by infection from septic teeth, and it is impossible to successfully treat the stomatitis without attention to the teeth. It is just possible that some cases of acute septic endocarditis may trace their origin to infection from the teeth and mouth. At least, in one such case I found the same organisms—a staphylococcus, *Streptococcus brevis*, and a short bacillus (? the *Bacillus necrodentalis* of Goadby)—present *post mortem* in the mouth, bronchi, the alveoli of the lungs, and on the valves of the heart.

Local Conditions not Dental.—Conversely there are many local conditions of the mouth which are liable to be mistaken for dental affections. For instance, I have seen a whole roomful of medical students mistake a primary chancre of the lip and jaw for an alveolar abscess, and a case of bilateral odontomata was for months treated as alveolar abscesses. A man whom I saw not long ago suffering from epithelioma of the superior maxilla was treated for some time for a simple ulcer of the mouth. Some four years ago I remember seeing a case in which during life the only symptom was constant odontalgia of the left side; the teeth were all perfectly sound, the patient felt ill and depressed, but there were no signs whatever. *Post mortem* a glioma about the size of a pigeon's egg was found just over the left Gasserian ganglion.

Chronic Lymphadenitis.—But to turn to a more frequent and more overloooked class of cases—those due to septic absorption from the teeth and mouth. The association of chronic lymphadenitis with carious teeth is now quite recognized. Several series of statistics have been compiled, but those of Odenthal of Bonn are perhaps the most conclusive, and are as follows:

Children examined	987	
No glands and no carious teeth ...	28.6	per cent.
Glands enlarged	70.7	,,
Glands and caries	50.0	,,
Caries and no glands	0.5	,,

I am unable to say whence these statistics were obtained, but, even if it were from a very "tuberculous" district, the fact that only 0.5 per cent. showed caries without gland enlargement is very significant. A chronically inflamed gland is one which probably is tuberculous or is likely to become so, and in carious teeth associated with tuberculous cervical glands tubercle bacilli have been found.[2] (I have found them in the saliva, but have not succeeded in demonstrating their presence in the teeth.)

Pyorrhoea Alveolaris.—The condition known as pyorrhoea alveolaris, "Riggs's disease," or more correctly marginal periodontitis, is even more closely associated with general systemic conditions than is dental caries. This disease may be defined as a suppurative condition of the upper part of the periodontal membrane due to an upset of the balance between the resistance of this latter tissue and the ordinary organisms of the mouth. The latter may become more virulent or the oral tissues may become less resistant, owing to: (*a*) The local accumulation of salivary calculous material, or (*b*) the presence of some general systemic disorder, such as gout, rheumatism, chronic alcoholism, chronic heart, kidney, or lung disease, diabetes, syphilis, or plumbism. When once established it is difficult to treat. The patient usually complains of malaise, dyspepsia, loss of appetite, and constipation, accompanied by a malodorous breath, disagreeable taste in the mouth, and occasional expectoration of pus, or purulent saliva. Some amount of anaemia is always present, and loss of body weight is marked in prolonged cases. The teeth are always more or less loose, the gums red, swollen, and glazed, and pus can be extruded from the space between the gum and the tooth. Strange to say, the teeth are not always tender, and this latter fact often misleads the patient, and sometimes his medical adviser, as to the cause of his trouble. Mr. Rickman Godlee records three such cases.[3]

One, a lady aged 40, who was treated for two years for lung trouble with no cessation of symptoms. Pyorrhoea was then found to be present, was treated, and the expectoration (which had consisted, to use the patient's own words, of lumps of green and yellow stuff) completely stopped.

Another patient, aged 25, presenting symptoms similar to the last, but with marked loss of body weight, was treated in the same way, with the result that, in her own words, "Life was again worth living."

In the third case, Mr. Godlee ascribes several attacks of acute trouble, accompanied by stomatitis and glossitis, to an exacerbation of a previous suppurative periodontitis.

It cannot now be doubted that this condition of pyorrhoea alveolaris is responsible for a large proportion of the cases of pernicious anaemia. Dr. W. Hunter goes so far as to say that he believes that the infection arises in nearly all cases from the mouth. It is, however, generally conceded that this condition arises from toxic absorption from some part of the alimentary tract, and of the latter, the mouth is, *a priori*, the most probable part. I have had two definite cases, both in men about 40 years of age. They both suffered from marked suppurative periodontitis.

The first was a typical case—"anaemic," lemon yellow complexion, muscular weakness, malaise, loss of appetite, etc. A blood count showed only 1,700,000 red corpuscles per c.mm. and haemoglobin 41 per cent. The patient was seen early, the pyorrhoea treated and arsenic given in increasing doses. He made a gradual recovery.

The second case did not come under treatment until both the local and general conditions were very advanced. The only hope of eradicating the disease was by extraction of the teeth, and to this course the physician with whom I saw the case would not agree, thinking the risk of haemorrhage too great. In spite of local and general treatment the man died.

These two cases serve to illustrate many similar cases which have been recorded, and establish the necessity of at any rate eliminating oral sepsis in all cases of pernicious anaemia. Dr. Dauber, of the Women's Hospital, Soho, has recently come to the conclusion[4] that septic teeth have a distinct influence upon uterine and ovarian conditions, and gives many instances in which the gynaecological lesion has only yielded to treatment after the oral conditions have been corrected. Mr. Kenneth Goadby in the Erasmus Wilson Lecture for last year records a number of cases of pyorrhoea alveolaris wherein marked improvement and in some cases absolute cessation of both local and general symptoms ensued after raising the opsonic indices of the patients to the organisms found in the periodontal discharge.

Prevention.

Even when these conditions are treated by the only means often available or possible—that is, the extraction of the teeth—we do not arrive at a much better state of affairs, for how large a proportion of the chronic gastric and intestinal cases filling the medical wards and the out-patient department of our hospitals is formed by prematurely toothless middle-aged men and women!

The only rational hope lies in the preventive treatment of dental disease, and therefore the next stage in my argument is a brief reference to the causes of dental caries. This, like many other diseases, is not the outcome of one single and specific cause, but is the resultant of several coincident forces which may be summarized as:

1. A lowered resistance on the part of the buccal and dental tissues.
2. The action of certain organisms.
3. The presence of fermentable carbohydrates.

These three factors must be coincident. The total elimination of any one factor would prevent the occurrence of caries. The first stage of the formation of a carious cavity is chemical, and the first step is obviously all-important. Many mouth organisms are capable of

fermenting carbohydrates with the production of acid, chiefly lactic but occasionally butyric acid. A reference to the accompanying table will show that monosaccharides are the most readily fermentable. Disaccharides require to be first inverted to monosaccharide by an enzyme formed by certain of the mouth organisms before lactic acid is produced. Starches require a double inversion, the first stage brought about either by ptyalin or organisms, before fermentation to an acid can occur, but in all cases it is seen that lactic acid is the end product unless, as occasionally happens, this lactic acid is again split by the action of organisms to yield butyric acid.

Monosaccharide:

$$\underset{\text{(Glucose)}}{C_6H_{12}O_6} = 2\underset{\text{(Lactic acid)}}{(C_3H_6O_3)}$$

Disaccharide:

$$\underset{\text{(Cane sugar)}}{C_{12}H_{22}O_{11}} + H_2O = \underset{\text{(Dextrose)}}{C_6H_{12}O_6} + \underset{\text{(Laevulose)}}{C_6H_{12}O_6}$$

$$C_6H_{12}O_6 = 2\underset{\text{(Lactic acid)}}{(C_3H_6O_3)}$$

Polysaccharide:

$$\underset{\text{(Starch)}}{(C_6H_{10}O_5)^N} + H_2O = \underset{\text{(Dextrin)}}{C_6H_{10}O_5} + \underset{\text{(Maltose)}}{C_{12}H_{22}O_{11}}$$

$$C_{12}H_{22}O_{11} + H_2O = 2C_6H_{12}O_6$$

$$2(C_6H_{12}O_6) = 4\underset{\text{(Lactic acid)}}{(C_3H_6O_3)}$$

$$2(C_3H_6O_3) = \underset{\text{(Butyric acid)}}{C_4H_8O_2} + CO_2 + 2H_2$$

Thus it is very evident that if carbohydrates remain in contact with the tooth for a sufficient length of time an acid is tolerably certain to be produced (because the necessary organisms are practically always present), and this acid dissolves the lime salts of the enamel, and a cavity is originated at the point of action.

Bearing in mind these facts, it is obvious that anything which favours the lodgement of carbohydrates on or around the teeth very much increases the risk of caries. Certain carbohydrate foods, such as biscuits, chocolates, caramels, soft white bread, cakes, and scones, are of themselves very adhesive. Milk, too, tends to leave a film upon the teeth, which readily yields lactic acid.

It is, perhaps, interesting to observe at this point the comparative consumption of sugars in the various countries as shown in the following table:

Sugars Consumed per Capita, 1905.

New Zealand	108.64 lb.
United States	92.46 ,,
Great Britain	77.83 ,,
Excess of New Zealand over Great Britain	30.81 ,,

Without reference to statistics, I should say that the incidence of dental caries in these three countries is roughly in the same proportion as the above figures.

But just as important as this is the configuration and structure of the teeth. Teeth irregularly disposed and crowded together will retain more foodstuffs in inaccessible positions than teeth normally placed. The same is true of teeth showing numerous pits, crevices, and other developmental defects in the enamel. Some of these irregularities are hereditary, some are due to accidental causes and habits; but the vast majority are due to one cause—non-development of the mandible—and this in turn is due to improper diet. It is significant that all these irregularities arise between the ages of 6 and 12. It has unfortunately become the custom of civilized people to feed children between these ages upon comparatively soft and pappy food which does not exercise their muscles of mastication. It is a well-known fact that those bones having the strongest muscles attached to them are developed most, and vice versa. The tongue also is one of the most important organs of mastication, and has a direct moulding and expanding influence upon the mandible. If the tongue does not develop, the mandible does not fall in, but it never expands; and the teeth, having been already formed, when they erupt adopt irregular and misplaced positions. Figs. 1 and 2 represent the shape of the mouth and the disposition of the teeth when this has occurred, and this is becoming so frequent an occurrence that these shaped arches are becoming the "normal" condition.

But not only is the horizontal plane of the bones affected, but also the vertical. This in the maxilla becomes "V" shaped as shown in Fig. 3. Fig. 4 shows what should be the normal shape of the oral and nasal cavities. This "V" shaped arch does not arise from lack of development, but from insufficient expansion, for it has been shown by measurements of these cases that the distance between A B and A′ B′ remains the same. The effect on the nasal cavities is obvious—their vertical and horizontal measurements are greatly diminished; further, if the nasal septum has an inherent tendency to growth, this can only occur by its becoming deflected. The result is that nasal breathing becomes more difficult, and, in any slight inflammation of the nasal mucous membrane, impossible; the patient acquires the habit of mouth breathing, adenoids develop in the stagnating cavity, and the tonsils enlarge. A vicious circle is thus established,

Fig. 1.

Fig. 2.

for persistent mouth breathing leads to further irregularities of the teeth, and deficient expansion, especially of the maxilla.

These statements may be summarized as follows:

Lack of any hard or fibrous food causes under development of the tongue[5] and other masticatory muscles. A weak, small tongue fails to expand the mandible, which in turn does not expand the maxilla, and therefore the nasal cavities remain small and ill-developed.

The dependence of the upper alveolar arch upon the lower is obvious upon reference to Figs. 3 and 4, where it is seen that the teeth articulate by means of inclined planes, and that the inner cusp of the lower teeth always closes inside that of the upper tooth, and thus any outward

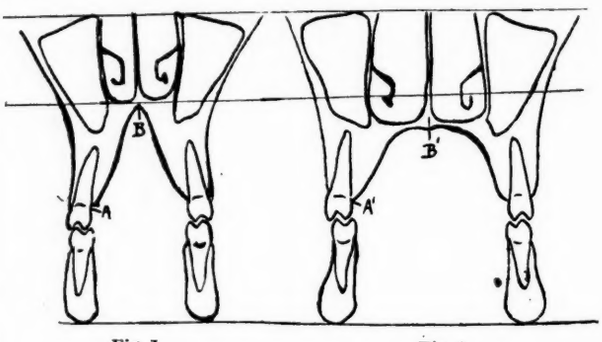

Fig. 3.

Fig. 4.

movement of the lower teeth must be followed by a similar movement of the upper teeth. This system of double inclined planes ensures the parallel movement of the whole of each tooth, and prevents the mere outward movement of the crown swinging upon the apex of the root as on a pivot. This is experimentally proved by the fact that most cases of the type of irregularity of the upper teeth seen in Fig. 1 can be remedied by an expanding or other device inserted on the inner aspect of the lower teeth; and this practice I have adopted for some time with success.

Foodstuffs also play an important part in the development of the teeth. If the mother during the period of gestation exists upon a diet poor in lime and phosphates, the child's teeth will probably be poorly developed. The same thing applies to the diet of the child between the ages of 12 months and 12 years, when the permanent teeth are developing.

There is a popular idea that it does not matter what happens to the deciduous teeth—one frequently hears the

expression, "Oh, but they are *only* his first teeth." Consequently the child is given all sorts of rubbish to eat under the belief that it does not matter. But it *does* matter, for two very important reasons:

1. An exceedingly bad habit is thus contracted by the child most difficult to eradicate when the permanent teeth arrive.
2. Broadly speaking, carious deciduous teeth mean carious permanent teeth.

Caries of the deciduous teeth causes contraction of the alveolar processes by allowing the teeth to come closer together, and thus leads to crowding of the permanent teeth and all its attendant evils. Caries of the deciduous teeth most frequently leads to alveolar abscesses, which infect the underlying permanent tooth germs and arrest their development, with the result that the teeth are erupted in a hypoplastic condition, and fall an easy prey to caries. A soft diet also impairs development of the permanent teeth by not exercising the jaws, and therefore not stimulating a sufficient blood supply to the ameloblasts and osteoblasts of the dentine papilla. We are therefore driven to the conclusion that from whatever standpoint the subject is considered, the prime factors in the causation of dental caries are errors of diet—chemical and physical.

What, then, can be done? That something should be done is gradually coming to be recognized on all sides; that so little has been done up to the present is most astonishing when one considers that dental disease of some kind is present in 80 per cent. to 90 per cent. of the people of civilized races. It is thus indubitably the most widespread of all diseases, and, as I have attempted to show, is far-reaching in its effects. But, unfortunately, cause and effect are not always associated.

There has been in the past, both in dentistry and medicine, too great a tendency to regard the teeth as isolated parts of an organism, as organs which exist of themselves and for themselves, and not intimately linked up in function with the rest of the body. Pawlow showed that mastication was the natural, and therefore the best, stimulus for gastric and saliva secretion; and efficient mastication implies an absence of caries. The teeth, it must be recognized, are an integral and inseparable part of the alimentary system, physiologically and pathologically. It is this fact, together with all that it implies, which should be impressed upon a medical student. I have heard abdominal surgeons express the opinion that, in view of the increasing number of gastric and intestinal cases, there is "a something" at work which is appreciably lowering the resistance of the alimentary tract. In my opinion this something is to be found in the enormous strain thrown upon it by the constant ingestion of improperly masticated food, incorporated with organisms (more or less virulent), toxins, and pus from diseased teeth; and also because of the avoidance of hard food, in part secondary to the tenderness of the diseased teeth. The intestines become atonic, having to deal only with non-fibrous easily-digestible substances. Any organ or organism which is overstrained or is atonic falls an easy prey to the attacks of micro-organisms.

Dental caries is largely due to errors of diet commencing before birth and extending over the first twelve years of a child's life. It is just during those periods that a medical man's advice is most often sought as to the suitability or otherwise of articles of diet, or, at least, he has opportunities of pointing out authoritatively the deleterious effects of common dietetic errors; and on account of this, in my opinion, a large percentage of the prevalence of dental disease lies at the door of the medical profession. We should therefore do all in our power to remove this stigma. A medical student, before he qualifies, should have some knowledge of what diet is beneficial and what deleterious to the teeth, and he should be taught to put this into practice; in doing so he will only be fulfilling the general principles of correct dietetics, for it might be stated in general terms that "what is best for the teeth is best for the rest of the alimentary system." He should also know something of how to aid natural resistance to caries by artificial prophylaxis; he should be able to write suitable prescriptions for various mouth washes, dentifrices, etc., for varying conditions of the mouth; he should be able to instruct parents in the care of their children's teeth. All this and more he should know. He is taught along similar lines with regard to the eye, and ear, and throat; why, then, should the teeth and mouth be omitted?

Medical men are often so situated as to be compelled to relieve dental pain, and I do not think I shall be hurting the feelings of any member of this Association when I say that this relief is most usually afforded by the extraction of the offending molar. But this is not as it should be. Therefore I would have the medical student to know the value of a tooth—to know when it can be lost and when it must be saved. The mere extraction of one tooth will often ruin a patient's articulation.

A medical student, too, should be able to recognize the difference between dental myelitis,* periodontitis, and alveolar abscess, and be able to relieve the pain of each of them without extracting the tooth should this be desirable. A medical man is often asked by a patient for an opinion as to dental treatment, or may be called in consultation with a dentist; in either case he will find such knowledge extremely useful, and it will obviate those awkward *contretemps* when the doctor says one thing and the dentist another. I am not suggesting that the dentist is always right; he is apt sometimes to take a narrow view of things, and forget that the teeth are necessary to the proper functioning of the rest of the body, and I have known a patient's general nutrition and health seriously impaired by injudicious dental treatment. It may be thought and said that I would make every medical man a dentist. That is not so, but, even if it were so, it would be only fair to the public, since every medical man is entitled legally to practise dentistry, irrespective of any dental training. On the other hand, in passing, I may say that I should like to see the converse true—that is, every dentist with a medical qualification. A medical student should also recognize the effects of measles, scarlet fever, rickets, and syphilis upon the teeth. He should be thoroughly imbued with the absolute necessity of close attention to the oral hygiene of patients whose treatment necessitates a prolonged milk diet, as in typhoid and surgical abdominal cases. He should know something of the treatment of fractures of the jaws by interdental methods.

The necessary amount of knowledge could be acquired by a medical student in a very short time; it would add no time to the length of his curriculum, and he himself would, I think, be the first when he got into practice to appreciate its value.

The medical inspection of school children is looming ahead, and it is highly improbable even if it were expedient that dentists as well as doctors will be appointed, yet it is very necessary that an efficient and reliable examination and report on the children's teeth should be made, as well as of other organs. Therefore on this account also it is desirable that medical practitioners should have some accurate knowledge of dental matters. This can be obtained in two ways: First, by making it necessary for every student before sitting for his final examination to present a certificate showing that he has received instruction in dental surgery, including a few lectures and practical instruction in the extracting and dressing of teeth. Secondly, to ensure that students should take this seriously by occasionally setting a dental question in the medical examination papers.

In order to facilitate the practical part of this scheme and in order to render the possible treatment of many medical and surgical cases more logical there should, of course, be an efficient dental department attached to every public hospital and dispensary.

In conclusion I would appeal to you, if I have convinced you of the desirability and practicability of these suggestions, that you will not be content with mere expressions of opinion but that you will take some active step towards the attainment of this object—that it may ever be the proud boast of the medical profession that it strives to the best of its power to eradicate those diseases from the incidence of which it derives its livelihood.

REFERENCES.

[1] Lumleian Lecture, 1899. [2] Starck: *Rev. de la Tub.*, 1896. [3] Roy. Med. and Chir. Soc., 1900. [4] *Brit. Dent. Jour.*, Clinical Lecture at the Hospital, January, 1908. [5] Pickerill: *Effect of Civilization on the Teeth*, 1902. Sim Wallace: *Physiology of Mastication*, 1903. Arbuthnot Lane: *Cleft Palate and Hare Lip*, 1904.

* Called sometimes "pulpitis."

FEEDING TRIAL IN RELATION TO "EPIDEMIC ENTERITIS."

By E. P. MINETT, M.D., D.P.H.,
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The possibility of using a practically sterile food for infants in relation to infantile summer diarrhoea, or "epidemic enteritis," has been considered from many points of view, all or most of the methods used starting with cow's milk as their basis.

Now as the case incidence of this disease in large town and crowded areas, as compared with rural districts, seems to be double, or practically so (11.5 against 5.0), it appeared probable that an experimental feeding of a number of infants living in their own homes, and in crowded and poverty-stricken districts, such as Bermondsey and Southwark, would be instructive both from a medical and bacteriological point of view, especially if the experiment were conducted during the summer months, in which the case incidence of this disease is highest.

It was with the object of collecting data with reference to this subject that some feeding trials were conducted with infants collected from various sources—the out-patient departments of Guy's Hospital, Royal Waterloo Hospital for Children, and the Surrey Dispensary. Special food was provided gratis for the use of selected infants in their own homes. The infants were brought up to the dispensary weekly, where they were weighed and medically inspected, while charts of their weight were carefully kept, together with notes as to the occurrence of rickets, scurvy, and especially diarrhoea.

The method employed was by using dried milk, of which there are several varieties on the market, prepared principally by German, French, and English firms, the last-named drawing their supplies from a particularly pure and carefully supervised source in New Zealand. Briefly, the method of preparing dried milk is as follows:

The cows are first inspected with reference to disease, such as tuberculosis, etc., by a veterinary officer. A contract is then made with the farmer, who undertakes to deliver the milk at the factory within three hours of milking. On receipt it is cooled by running over a cooler which has water at 50° F. running through it. Meanwhile the cans in which the milk was delivered are placed in a trough full of lime water; afterwards they are rinsed by being placed over a jet of cold water, and then over a jet of superheated steam, finally they are again rinsed with a jet of cold water before being returned to the farmer. A sample of the milk after cooling is now estimated for butter fat by Babcock's process, and farmers are paid in New Zealand for the milk on the basis of its butter-fat contents. Next the cooled milk is filtered by pressure through a filter composed of four prepared pieces of filter paper and a specially prepared cloth, to remove any dirt and filth present. I am informed that the amount of filth removed from even the most carefully collected samples is surprising. The mixed product having been again standardized to secure a product as nearly constant in composition as possible, the moisture is abstracted by allowing the milk to fall in a constant thin stream over revolving cylinders, heated by steam to a temperature of 240° F. The milk is in contact with the cylinders for about 2 seconds only. The dried powder is then removed mechanically and at once packed in hermetically sealed tins for export.

The efficiency of the process to destroy any organisms, whether pathogenic or otherwise, present in the original milk, may be inferred from the following passage occurring in Dr. Klein's description of several of his experiments: "Notwithstanding the prodigiously large number of specific organisms with which the sample had been infected by me, none of them could be detected after the milk had been subjected to this drying process."

The method I employed, which was found to be the easiest both from the distribution and feeding point of view, was as follows:

Each child, when first taken under treatment, was carefully weighed, then thoroughly examined with a view to rickets, scurvy, marasmus, etc. A chart was made out with notes, and a card given to the mother. To each mother was given a sealed tin of the milk, bearing printed instructions as to feeding, for easy reference; also a small measure holding roughly a drachm weight of the food, together with two bottles and a supply of teats, the latter of the variety that will fit over the neck of almost any bottle.

According to the infant's age the mother was instructed to put so many measures of the dried milk into the bottle, previously rinsed out with boiling water, and then to fill up with boiling water to a mark made on the bottle with a file. This obviates all the trouble to the mother of weighing the powder or measuring the water. Roughly, 1 of powder to 7 of water is the strength of food we usually start with, and a table, as given below, is supplied for their guidance to the nurses who distribute the food.

Age of Infant.	Intervals of Day Feeding.	No. of Night Feeds.	Boiling Water.	Dried Milk.
1 week	2 hourly	2	1 oz. to 1½ oz.	1 measure.
2 to 3 weeks ...	2 hourly	2	2½ oz.	2 measures.
4 to 5 weeks ...	2 hourly	1	3 oz.	2 to 2½ measures.
6 to 12 weeks ...	2½ hourly	1	4 oz.	3 to 3½ measures.

and so on in about the same ratio.

No fixed quantity was given, the amounts being varied according to the results of observations by the medical officer, each child being prescribed for separately, and the food modified as occasion demanded. The mothers' attention was also drawn to the fact that, as some of the fat separates out and floats on the surface, the bottle requires shaking occasionally during a feed. Printed instructions were given to the mothers, and insisted on by the nurses, as to scalding bottles and teats when not in use, and also as to the importance of making each feed separately, and not keeping a feed, or part of one, from one feeding time to another. I prescribe, in addition, a small quantity of orange, or sweetened lemon juice to be given daily with a teaspoon after one of the feeds.

The results as to weight were most gratifying, the infants gaining in weight from 4 oz. up to 10 oz. weekly, the average weekly increase being about 6 oz. The worst drawback we have to contend with is the fact that the mothers will not bring up the children regularly to be weighed and inspected, even although the food, bottles, and teats are all supplied gratis. They will often miss several weeks at a stretch, and frequently drop off altogether after a few weeks, just as the child has begun to make progress.

With regard to chemical composition, I used two varieties of dried milk—the half cream and full cream—the difference, of course, consisting mainly in the amount of fat present.

As the experiment only ran for about eighteen or nineteen weeks, comparison of their respective merits cannot be made, the incidence of diarrhoea being the special object aimed at. The cost, if the mother had to buy the food herself, works out at roughly from 2d. to 4d. a day for a young infant.

Chemical Composition of one of the Samples known as "Full Cream," together with a Dilution of 1 to 7 with Water, Compared with Cow's Milk and Human Milk:

	Dry Powder.	Diluted 1 in 7 Water.	Cow's Milk.	Human Milk.
Milk proteids	22.2	2.7	3.7	1.5
Milk sugar...	41.0	5.1	4.7	6.8
Butter fat	27.4	3.4	3.7	3.3
Salts	5.9	0.7	0.7	0.2
Moisture	3.5	88.1	87.2	88.2
Total solids		(11.9)	(12.8)	(11.8)

As will be seen by the above, dried milk diluted with water, 1 part to 7, nearly approximates to human milk as regards fats and sugar, the proteids and salts in lesser degree; when it is remembered that the composition of cow's milk may vary considerably in different samples—the fat alone varying from a minimum of 1.9 per cent. to a maximum of 6.9 per cent., and the total solids from 10 per cent. to 16 per cent.—the advantages of having a food with a definite chemical composition, which is always constant, is very great.

Acidity of Samples Examined.

Dried milk A, 10% sol. ... 100 c.cm.=6.8 c.cm N/10 NaHO sol.
Dried milk B, 10% sol. ... 100 c.cm.=4.4 „ „ „
Samples of ordinary milk taken:
100 c.cm.=17 to 20 „ „

The ash of the dried milk Sample B after incineration gave no effervescence with HCl, nor could any evidence of the presence of boracic acid be detected.

With regard to the feeding value of dried milk, if the calorific value of its proteid, fat, and carbohydrate are worked out as such, a child, for instance, of, say, 10 lb. weight being fed every two hours during the day and two feeds at night would have sufficient calorific energy at its disposal to satisfy its requirements and a very liberal margin of nearly 200 foot tons to spare daily, the amount varying according to whether Voit's, Chittenden's, or another scale is taken as the standard.

The curds produced by solutions of the dried milk are extremely small, and vary slightly in consistence as to the kind of milk used, whether "half" or "full cream."

Experiments conducted with rennet as regards the clotting capacity gave the following results:

A sample of boiled cow's milk with rennet=thick solid curd.
„ unboiled „ „ =large heavy curds.
„ dried milk solution--1-7 (B) =very small curds.

I also frequently examined the faeces of the infants fed on the dried milk, but could not detect any curds except in the case of the child suffering from diarrhoea, which was of the lienteric variety. Probably the citric acid, etc., in the fruit juice was largely responsible for the absence of curds; unfortunately I did not do a control feeding without the fruit juice.

The Bacteriology of Infantile Diarrhoea in Relation to Milk Feeding.

The following amoebae and bacteria have been isolated from the faeces of children suffering from this complaint: Amoebae, including *Paramoecium coli*, *Sarconomas intestinalis*, and *Amoeba coli* (as far as I am aware, very little work has been done on these organisms, therefore I have neglected them), together with the moulds, etc., such as *Oidium albicans*, *Aspergillus glaucus*, *Penicillium glaucum*, and *Mucor mucedo*. The principal bacteria which have been isolated from the stools of children suffering from diarrhoea are noted below. Whether the diarrhoea is produced by the lactic acid fermentation caused by many of these organisms, or by direct absorption of toxins from the alimentary canal, is still a debated point. A brief glance at the actions of the commoner bacteria associated with infantile diarrhoea, on milk under laboratory conditions—that is, incubated at 37° C.—may be of interest.

B. coli forms acid, gas, and firm clot in litmus milk; it also ferments lactose, forming acid and gas.

B. dysenteriae turns litmus milk first acid and later alkaline, and does not ferment lactose.

B. enteritidis (Gaertner) usually turns litmus milk alkaline and does not affect lactose; but different strains of the bacillus act differently.

B. enteritidis sporogenes gives a very characteristic reaction with litmus milk. First, a large clot is formed; later this is broken up by the abundant gas formation, and an almost perfect separation into curds and whey takes place; the latter is acid, and swarms with the bacilli. As this organism is spore-bearing it would not be destroyed by pasteurization or raising to boiling point only, but apparently it is destroyed by the drying process.

B. butyricus (Bodkin) was isolated by Klein in 1895. It ferments lactose, forming acid and gas.

Morgan's No. 1 bacillus with litmus milk slowly gives alkaline reaction, does not change lactose, but with galactose forms acid and gas. It produces fatal diarrhoea in rabbits, rats, and monkeys fed on food contaminated with cultures of it.

Looking at the foregoing list of organisms, and their actions on milk, the staple diet of infants, it is at least feasible to assume that, presuming they are not present in the intestine (except, of course, *B. coli*, which is always present), the use of a sterile food during the diarrhoea season must be advantageous.

Even assuming the absolute necessity of symbiosis, as held by many authorities, there are plenty of organisms having their normal habitat in the intestine without introducing fresh ones of a highly pathogenic nature through the medium of filthy milk.

With reference to the weight increase, as previously mentioned, from 4 oz. to 6 oz. weekly, I think, it was not bad when it is remembered that none of the infants were normally healthy or well cared for. All were collected from the out-patient departments, all were children of the poorest and most neglected class; and all were suffering from one or other of the various ailments so common amongst this class of children, principally bronchitis, bronchopneumonia, marasmus, and in some cases diarrhoea, but the latter were, of course, not included in the report as to the incidence of same during the feeding, but a record kept only of their increase in weight after the diarrhoea had ceased.

Summary.

The trial lasted nineteen weeks altogether, during which 38 infants were supplied with the food gratis, and fed solely on it.

The length of time during which the children were under observation varied, some being brought up regularly every week for the whole time, and these did the best; on the other hand, others were only brought up for a week or two, and then were not seen again owing to the slackness of the mothers, or, perhaps, because they were too busy to spare the time to bring the children to the dispensary. During the whole period we had 5 cases of diarrhoea, but as 2 came to us already suffering from the complaint, and 2 contracted it at times when they were not being fed by us—that is to say, they ran out of food, and instead of coming up at once for a fresh supply the mother fed the infants for about a week on such substitutes as boiled bread and water, condensed milk, etc.—it is only fair to exclude these also. The only case I cannot account for is that of a child who was fed on dried milk solely from start to finish, and had an attack of diarrhoea lasting two days during that time. A careful bacteriological analysis of the faeces failed to demonstrate the presence of any organisms usually associated with epidemic enteritis; I am of the opinion that the attack may have been purely accidental, especially as it lasted such a short time, and the child did not lose more than 4 oz. in weight during the attack.

In conclusion, I am of opinion that dried milk is deserving of further trial during the summer months when epidemic enteritis is so prevalent, especially amongst the poorer classes, and, if prepared as indicated, it is a food which if not absolutely sterile is very nearly so.

Appended is the result of the bacteriological analysis both of the solution of dried milk prepared as directed, and also of a sample of ordinary milk after pasteurization. I would desire to acknowledge my indebtedness to my chief, Dr. Eyre, for his kind supervision; also to my colleagues, Messrs. Leeming and Ryffel, for their kind assistance. As unfortunately one supply of dried milk was sent me in a cask a bacteriological analysis was only possible of sample "B," which was sent out in sealed tins. A solution in sterile water smeared on the surface of nutrose agar failed to give a growth in seventy-two hours after incubation at 37° C.

Bacteriological Analysis of Sample B Dried Milk.

Ten grams were weighed into a sterile flask and made up to 100 c.cm. with sterile water and used for analysis.

Number of organisms growing on gelatine plates and capable of multiplying at 20° C. after six days, 200 per c.cm.

Organisms on agar plates cultivated at 37° C., 0 per c.cm.

"Microbes of indication":

B. coli communis ... ... absent from 1 c.cm.
B. enteritidis (Gaertner) ... „ „ „
B. enteritidis sporogenes ... „ „ „
Streptococcus faecalis ... „ „ „

No tubercle or diphtheria bacilli could be detected.

A few moulds developed on the plates, but were probably only indicative of aërial contamination; 50 c.cm. were centrifugalized in a high-speed machine, and both cream and deposit examined microscopically and culturally for organisms, but none were detected. A few leucocytes only were observed in cream and deposit.

A sample of ordinary cow's milk was subjected to pasteurization for twenty minutes at 75° C., and after straining through four thicknesses of sterile butter muslin into a sterile flask, gave the following result on analysis:

Organisms growing on gelatine plates at 20° C., 70,000 per c.cm.
Organisms growing on agar plates at 37° C., 800 per c.cm.

Cream and deposit after centrifugalizing examined microscopically:

Cream:	Streptococci Staphylococci Epithelial and pus cells	present
Deposit:	Streptococci Staphylococci Epithelial and pus cells	present

Cultures on blood serum of creams and deposits showed the presence of a large Gram-positive, spore-bearing bacillus, probably *B. subtilis*, only (not inoculated or investigated further).

Specific examination after pasteurization—

B. coli communis absent from	... ...	1 c.cm.
Klebs-Loeffler bacillus	,, ...	1 ,,
B. enteritidis (Gaertner)	,, ...	1 ,,

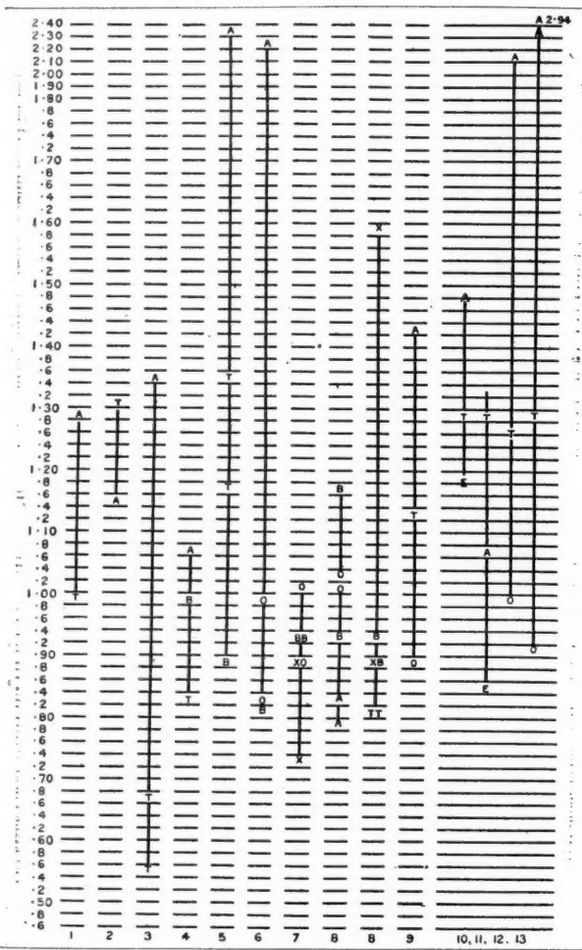
No tubercle or diphtheria bacilli were detected in cream or deposit.

CAN OPSONIC ESTIMATIONS BE RELIED ON IN PRACTICE?

By E. C. HORT, B.A., B.Sc.Univ. Paris, M.R.C.P.Edin.

It frequently happens in hospital practice and in private that a reliable method of diagnosing difficult cases of infection is urgently needed. In no disease is this more true than in tuberculosis. For general use, where ordinary methods fail us, the cutaneous methods of von Pirquet, Moro, and Wolff Eisner, including Calmette's modification of these by conjunctival instillation, are not of pre-eminent value. In private practice the dangers and fallacies of

Chart showing Different Opsonic Indices of Identical Serums, as Estimated by Different Observers.



Calmette's test effectually bar its universal acceptance. Of Professor Courmont's modification of the serum diagnosis of tuberculosis there are not as yet sufficient data to judge. In this country, and in America, it is widely believed that in the opsonic index we have at last a method which is trustworthy not only for diagnostic purposes, but also for prognosis, and in determining treatment. After extensive trial of its merits, mainly in tuberculosis, over a period of three years, I am not able to endorse the view that the index is a safe guide to diagnosis and treatment, even when estimated by acknowledged masters of the opsonic art.

In order to test its value as presented to us to-day, I have from my own private practice taken a series of cases, some of which had been sent for diagnosis, and in whom a trustworthy opinion, apart from physical signs, was therefore of real importance. No sort of selection has been made, and results that favour the opsonic method of estimation have been impartially recorded side by side with the unfavourable ones. In all cases the nature of the test has been explained to the various observers, who have without exception encouraged the inquiry. One observer, indeed, expresses the hope that the tests will be published in order to stimulate further efforts in improving the technical details. Such devotion to the highest traditions of scientific research cannot but command our admiration. Each observer mentioned in the accompanying chart is the same throughout, and is designated always by the same letter. It is, perhaps, unnecessary to say that only experts with years of practice and only those directly connected with well-known laboratories have been asked to examine the various serums supplied. In each of these twelve cases two or more samples of serum drawn at the same time and under precisely similar conditions, have been sent to two or more workers, sometimes in the same laboratory, sometimes in different laboratories. In addition to this, as will be seen, occasionally two samples of the same serum have been sent to one observer, who was not informed that they were samples of identical serums.

In each case the following precautions were taken:

1. Whether taken from vein, finger, or ear, the serum was separated from the clot at the end of six hours after puncture of skin or vein.
2. No serum was estimated unless quite free from contamination from red cells.
3. In sealing the tubes all possibility of heating the serum was obviated by using tubes with long drawn ends.
4. All tubes were sealed within five minutes of collection.
5. All indices were estimated within twenty-four hours of collection.
6. All samples of each batch of serum were taken from blood provided by one bleeding, in most cases by venupuncture.

Tests 1 and 2.

Disease suspected: renal tuberculosis.

A dose of $\frac{1}{1000}$ mg. T.R. tuberculin was administered by the mouth and the indices to tubercle bacillus were estimated by two observers in different laboratories, both before and after inoculation. The interval between the two sets of observations was fifteen hours. The indices returned were:

Before Inoculation.

Observer A.	O.I. to T.B. ...	1.29	Phagocyte count not kept
Observer T.	,, ...	0.97	,, ,, ,,

After Inoculation.

Observer A.	O.I. to T.B. ...	1.15	Phagocyte count not kept
Observer T.	,, ...	1.30	,, ,, ,,

In this case observers A. and T. differed in their estimation of the index after inoculation by 0.15, a small difference. Before inoculation they differed by 0.32, a not inconsiderable difference. Further whilst A. estimated that inoculation was followed by a fall of index, Observer T. registered a rise. Two indices were within normal limits and two outside it.

Tests 3 and 4.

Disease suspected: tuberculosis, position of focus unknown. In this case there was no direct evidence of any organ being directly the seat of tuberculous infection, but in view of anomalous pyrexia it was necessary to exclude, if possible, such a contingency. Two series of observations were therefore undertaken with a week's interval. In the first test two samples of the same serum were sent to one observer, and a third sample was sent to a second observer in a different laboratory.

The indices returned in the first test were:

Observer A.	O.I. to T.B. ...	1.34	Phagocyte count not kept
Observer T.	,, ...	0.67	,, ,, ,,
Observer T.	,, ...	0.55	,, ,, ,,

In the second test three tubes of the same sample of serum were sent to three observers in three laboratories a week after the first test.

The indices returned were:

Observer A.	O.I. to T.B. ...	1.06	Phagocyte count not kept
Observer B.	,, ...	0.98	,, ,, ,,
Observer T.	,, ...	0.82	,, ,, ,,

In the first test the maximum variation was 0.79, the minimum 0.12, and the middle variation 0.67. Observer T. differed from himself by 0.12. In no case was the index within normal limits.

In the second test the maximum variation was 0.24, the next largest 0.16, the minimum 0.8. In no case was the index outside the normal limits.

TEST 5.

Disease: pulmonary tuberculosis, with well-marked physical signs, fever, and tubercle bacillus in the sputum.

Four tubes of the same sample of serum were sent to three observers in three different laboratories. To Observer T. two tubes of the same serum were sent without his knowledge. The indices returned were:

Observer B.	O.I. to T.B. 0.88	Phagocyte count of 100 cells,	211 : 240
Observer T.	,, 1.17	Phagocyte count not kept	
Observer T.	,, 1.34	,, ,,	
Observer A.	,, 2.34	,, ,,	

The maximum variation here was 1.46, the next largest 1.17, and the minimum 0.17, the figure by which Observer T. differed from himself. In this case two indices were within normal limits and two above.

TEST 6.

Disease suspected: miliary tuberculosis. In this case the patient was extremely ill with high fever, but the physical signs in the lungs were anomalous.

Four tubes of the same serum were sent to three observers in three different laboratories, two tubes of identically the same serum being given to Observer O. without his knowledge. The indices returned were:

Observer A.	O.I. to T.B. 2.20	Phagocyte count not kept	
Observer O.	,, 0.96	Phagocyte count of 100 cells,	126 : 130
Observer O.	,, 0.82	,, ,,	107 : 130
Observer B.	,, 0.82	,, ,,	193 : 240

In this case the index returned by B. was practically identical with one of the indices returned by O., who differed from himself by 0.14. The maximum variation between A. and B. was 1.40. In a case almost certainly tuberculous clinically of four observations only one was outside normal limits.

TEST 7.—*Serum from Normal Individual.*

In this case six samples of the same serum were sent to three observers in three different laboratories, each observer receiving unknown to him two samples of the same serum.

The indices returned were:

Observer X.	O.I. to T.B. 0.72	Phagocyte count of 100 cells,	202 :
Observer O.	,, 0.87	,, ,, ,,	222 : 268
Observer B.	,, 0.92	,, ,, ,,	231 : 250
Observer B.	,, 0.93	,, ,, ,,	232 : 250
Observer X.	,, 0.89	,, ,, ,,	249 :
Observer O	,, 1.07	,, ,, ,,	288 : 268

In this case B.'s observations were practically identical, and were very close to single observations of O. and X. The latter, however, differed from himself by 0.17, and O. differed from himself by 0.20. The maximum variation also was considerable—namely, 0.35. The fact, however, that all observers returned an index within normal limits is striking.

TEST 8.

Disease suspected: renal tuberculosis. In this case there was present, in addition to the signs incriminating the left kidney, a large inflamed tuberculous cervical gland undergoing rapid softening. Massage of the kidney was undertaken, and the opsonic indices were estimated before and after massage. In each case six samples of the same serum were sent to six observers in five different laboratories, each observer receiving, unknown to him, two samples of the same serum. Observer B. alone was given tubes before and after massage.

The indices returned were:

Before Massage.

Observer A.	O.I. to T.B. 0.78	Phagocyte count of 100 cells,	—
Observer A.	,, 0.83	,, ,,	—
Observer B.	,, 0.93	,, ,,	193 : 208
Observer O.	,, 1.00	,, ,,	228 : 226
Observer O.	,, 1.03	,, ,,	233 : 226
Observer B.	,, 1.17	,, ,,	245 : 208

After Massage (Twenty Hours).

Observer T.	O.I. to T.B. 0.81	Phagocyte count of 100 cells,	227 : 281
Observer T.	,, 0.82	,, ,,	229 : 281
Observer B.	,, 0.89	,, ,,	220 : 250
Observer B.	,, 0.93	,, ,,	232 : 250
Observer X.	,, 0.89	,, ,,	246 : 277
Observer X	,, 1.59	,, ,,	443 : 277

In this case some of the results are remarkably consistent. Observer A. differs from himself by only 0.05, Observer O. by only 0.03, Observer T. by only 0.01, and Observer B. returns an identical index before and after massage of 0.93. On the other hand, the value of this unanimity is upset by the maximum variation before massage, 0.39, and a maximum variation after massage of 0.78. Again, whilst B. returns an identical index before and after massage, his second reading gives a drop after massage of 0.24, the difference between his first two observations. Further, Observer X. is seen to differ from himself by 0.70. In conclusion, it is worth noticing that in a case obviously tuberculous only two indices were returned as being outside the normal limits, one being 0.02 below and the other 0.39 above.

The interval between the two sets of observations was twelve hours.

TEST 9.

Disease suspected: pulmonary tuberculosis.

In this case three samples of the same serum were sent to three observers in two laboratories.

The indices returned were:

Observer A.	O.I. to T.B. 1.42	Phagocyte count of 100 cells,	95 : 67
Observer T.	,, 1.02	,, ,, ,,	180 : 176
Observer O.	,, 0.95	,, ,, ,,	178 : 190

Here A. differed from O. by 0.47. The next largest variation was 0.40, and the smallest 0.7. Two indices were well within normal limits, and one much above.

TESTS 10, 11, 12, 13.

Disease suspected—pulmonary tuberculosis. Moderate fever.

In this case, on three successive days three samples of identical serums were sent on four different occasions to three different observers.

The indices returned were as follows:

11.30 a.m. first day:			
Observer A.	O.I. to T.B. 1.48	Phagocyte count of 100 cells,	136 : 92
Observer T.	,, 1.28	,, ,,	230 : 180
Observer E.	,, 1.18	,, ,,	159 : 134
6 p.m. first day:			
Observer A.	,, 1.6	,, ,,	147 : 92
Observer T.	,, 1.28	,, ,,	230 : 189
Observer E.	,, 0.84	,, ,,	113 : 134
6 p.m. second day:			
Observer A.	,, 2.16	,, ,,	145 : 67
Observer T.	,, 1.25	,, ,,	221 : 176
Observer O.	,, 0.95	,, ,,	178 : 185
6 p.m. third day:			
Observer A.	,, 2.94	,, ,,	197 : 67
Observer T.	,, 1.28	,, ,,	—
Observer O.	,, 0.92	,, ,,	—

It is of interest to note that the temperature at the times when the various sets of observations were made were as follows:

First Set.	Second Set.	Third Set.	Fourth Set.
99.6 ...	100.6 ...	100.2 ...	99.0

The observations of Observer T. were remarkably consistent, being on all four occasions practically identical. The maximum variations of T. from A. on each occasion were, however, 0.20, 0.32, 0.90, 1.66. The maximum variation in all the observations was 2.02.

That opsonins do exist as factors to be reckoned with appears to have been firmly established by Sir Almroth Wright and his many followers. That they represent more than a fractional part in the highly complex machinery of immunity production we may still be permitted to doubt. Granted, however, for the moment, that opsonins are the important factor in the phenomenon of immunization that many believe them to be, the question at the head of this paper is constantly arising. Technical considerations of standardization of emulsions, cultural difficulties, agglutination questions, and so forth concern only those experts whose responsibility it is to render such technicalities as free from sources of error as possible. They do not affect the practising physician, whose only concern is with the pertinent questions of reliability and cost. As regards cost, as every one knows, it is high and necessarily so, and a most serious objection to wide use of the method it is. Regarding the question of reliability, it is quite impossible to ignore the fact that countless observations have been reported in which estimations have appeared to be of the highest value, either in diagnosis, or in directing some particular line of treatment. This is by no means, however, a universal experience, even when every effort has been made to secure the services of the high priests of the art. There appears, indeed, to be a growing conviction that, except possibly in the hands of an extremely small band of experts, the method is not of the general utility with which it has been credited.

The results I have quoted seem to support this conviction. If there is a satisfactory answer to these results, no doubt it will be forthcoming.

I take this opportunity of acknowledging my indebtedness to Dr. A. Venning for continuous help in the collection and separation of the serums referred to.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

IMPERFORATE PENILE URETHRA: COMPLETE OCCLUSION OF MEATUS.

ON January 31st I attended a lady at the delivery of her sixth child. Labour was perfectly normal, and the child was a healthy male weighing 9 lb. 6 oz. When I visited my patient two hours later, the nurse informed me that the infant's penis was "tied down underneath." I found that there was no meatus at the end of the penis, nor any urethral orifice further back. The condition otherwise simulated hypospadias, and the scrotum, divided into two folds, presented the appearance of a pair of labia, which suggested hermaphroditism. The integuments of the dorsum of the penis were hypertrophied, and hung like an apron over the glans, which was perfectly formed. I made a careful dissection of the glans at the site of the meatus, and to my great relief urine gushed out when my incision had reached the depth of ¼ in. I had, in fact, opened the blind end of an otherwise perfect urethra. The child now passes urine without any difficulty through the artificial opening, and is a fine, healthy, well-developed infant, progressing favourably. The parents and their other children are perfectly healthy.

St. Albans, Herts. JOHN HOBBS, L.R.C.P.and S.Irel.

[This condition is uncommon. For extreme cases see Professor Arthur Keith, "Malformations of the Hind End of the Body," Lecture II, heading Imperforate Penile Urethra, JOURNAL, December 19th, 1908, p. 1807; also Shattock, "Imperforate Urethra in a Fetus of about the Fourth Month," *Trans. Path. Soc.*, vol. xxxix, 1888, p. 185. "Occlusion most frequently occurs between the triangular ligament and the glans, and often the whole of this tract is affected"(Keith). Our correspondent will bear in mind that (1) patent urachus is always possible when a male infant is born with any mechanical obstruction to micturition, so that he may find that in his case urine will leak from the umbilicus if the bladder be allowed to become distended, but this symptom usually develops after infancy. (2) Hermaphroditism is quite probable in this case. The testes may be undescended, and even if there be one or both genital glands in the scrotum one or both may be ovaries. In respect to the surgery of congenital occlusion of the meatus Duplay's advice should be followed. The incision through the line of atresia should be followed by the introduction for several days of a large bougie, which need only be passed for a short distance into the urethra; otherwise cicatricial contraction may advance to such an extent as to interfere with micturition and to involve well-known vesical complications.]

INVERSION OF THE UTERUS.

DR. A. W. HOLTHUSEN'S interesting case of acute inversion of the uterus following delivery recalls to my mind a similar case with which I had to deal about three years ago.

On April 4th, 1906, I received an urgent message from a neighbouring practitioner to come and assist him in a confinement case. I found the patient pale and collapsed; there were signs of profuse haemorrhage, and the uterus was completely inverted and lying outside the vulva. My colleague explained that he had only arrived at the house about ten minutes before me in response to a call from an untrained midwife of the Gamp type, and found the patient in the condition described; he had just had time to peel the placenta off the inverted uterus. At his request I made an immediate attempt to replace and reinvert the organ. The patient was lying on her left side in a state of extreme shock, with a barely perceptible pulse and shallow respiration. I gripped the displaced organ with my left hand and pressed it steadily upwards. The vagina and cervix were readily dealt with, but considerable difficulty was experienced in reinverting the body and fundus of the uterus. Having pressed the fundus through the os, I used the closed fist of my left hand while steadying the abdominal walls with the right. After a little manipulation the fundus was at last pushed back to its proper position. There was no recurrence of the inversion. As, however, the patient remained in a collapsed condition, it was decided to resort to saline infusion. In the absence of more suitable apparatus, an antitoxin syringe was used for this purpose, and a pint of the salt solution injected into the subcutaneous tissue between the scapulae in repeated doses. Some strychnine was also given hypodermically, and stimulants were administered by the mouth. The patient revived considerably, and was left to the care of her friends, who were instructed to keep her very quiet.

I did not see the patient again until three weeks later, when she walked into my surgery carrying her baby. She complained of some pain in her back and attacks of dimness of vision, but otherwise felt well. I was subsequently told by her medical attendant that her recovery was uninterrupted. I have recently ascertained that the woman has had another child since, and that labour was in every way normal. At the time of the inversion the patient, whose age was 22, was going through her second confinement. Nothing special occurred on the first occasion. There was a strong suspicion in this case that the inversion was the result of traction on the umbilical cord by the midwife, but this was strenuously denied. The latter stated, however, that the cord was twisted round the child's neck when it was born.

London, E. EDMUND HAY.

HERPES OF THE SECOND AND THIRD CERVICAL POSTERIOR ROOT AREAS, ACCOMPANIED BY FACIAL PARALYSIS.

As motor paralyses accompanying herpes zoster are comparatively rare, the following case is of some interest.

On October 27th, 1908, the patient, a man aged 50, noticed "a few little pimples" above the left ear and behind the ramus of the jaw, and in the occipital region on the left side. Between this day and October 30th the eruption developed fully, consisting of vesicles, some of large size, on an erythematous base. There were no premonitory symptoms, and no definite pain was complained of during the development of the rash, only a little aching of the face. The pulse-rate was quickened and the temperature a little raised.

As seen by me on November 1st, the distribution of the eruption was as follows:

1. Below, it extended to the clavicle.
2. Above, to some distance above the ear, over the lower parts of the parietal and occipital bones. A few scattered vesicles extended forwards almost to the temporal crest of the frontal bone.
3. Anteriorly, on the face it extended to about the anterior margin of the ramus of the jaw as low as the angle of the mouth, and on the neck it extended to the middle line.
4. Posteriorly, it extended to the middle line of the neck and lower part of occipital bone.

This distribution comprises, as I understand, the second and third cervical posterior root areas of Head, though I have not been able to find diagrams illustrative of the area supplied by the second cervical posterior root, herpes of this area being invariably associated with herpes of the third cervical root area. There were also a small isolated patch over the second left chondro-sternal articulation, and two or three isolated vesicles just below the left ala nasi.

The crop of vesicles was most abundant over the whole length of the sterno-mastoid muscle, especially behind the ear. On the ear itself there were a few scattered vesicles.

On October 30th, when the eruption was at its height, the face was noticed to be swollen on the left side, and the lower eyelid to be puffy.

On November 3rd well-marked paralysis of the left side of the face showed itself. The mouth and nose were drawn to the right side, the left eye could not be closed, the left eyebrow drooped whilst the right was drawn up, and he laughed and frowned with the right side of the face only.

On November 18th there remained of the eruption only the erythema, but recently the patient had begun to complain of severe pain at times, especially at night, about the neck and jaw.

The patient was a very unhealthy subject, badly nourished, and deformed by very pronounced lateral curvature of the spine, and in addition showed distinct physical signs of tuberculous disease of both lungs, a condition to which Dr. Head alludes in his article in *Allbutt's System* as frequently associated with herpes.

Brighton. E. WEATHERHEAD.

THE RADICAL TREATMENT OF ELEPHANTIASIS.

IN the JOURNAL of October 31st, 1908, containing the paper and discussion on the treatment of elephantiasis, there is but scant mention of the radical treatment of this disease as affecting the extremities. Sir Havelock Charles makes some complaint that Indian clinical experience takes a long time to permeate to writers in England, but judging from his further remarks, where he refers to his having removed the affected tissues from the knee to the toes, etc., and that Major Stevens, he believed, had very successfully practised the same, it would appear that our Madras clinical experience has taken a long time to permeate to Calcutta.

The first operations of this kind ever performed in India were performed by me in Madras at the Royapetta Hospital, and subsequently the operation was practised a considerable number of times both by myself and various colleagues at the General Hospital, Madras. My early cases were published in the proceedings of the South Indian Branch of the British Medical Association. The Director-General, Indian Medical Service, of the time, when visiting Madras, saw some of my earlier cases: the procedure was new to him. I mentioned the operation to the then surgeon to the College Hospital, Calcutta, and his reply showed that it was new to him also. Sir Jonathan Hutchinson, when touring in India, also saw some of my cases.

So many surgeons have had a hand in bringing the technique of the radical operation for scrotal elephantiasis to its present high state of perfection that no surgeon or group of surgeons can claim priority; but in the matter of the radical operation on the extremities I do claim priority for Madras. Experience has shown that the operation in selected cases is sound and justifiable. I use the term selected advisedly; it would take too long here to go into the advantages and disadvantages of the operation. Suffice it to say that in those cases in which the limb has attained such dimensions that the mass interferes seriously with progression—cases in which in former times amputation has been performed—the operation under notice is to be recommended.

W. B. BROWNING, Lieutenant-Colonel, I.M.S.
Thurles, Tipperary. Principal Medical College, Madras.

ANGINA.

RECENT physiological experiments (Schäfer, Oliver-Sharpey Lectures, April 9th, 1908) show that the coronary arteries differ from the systemic in the matter of the contractility of their walls. It has been generally recognized, and it is demonstrated by Schäfer and Lagendorff's experiments, that the coronary arteries are little, if at all, controlled by vaso-motor muscle.

The absence of contractile power from the coronary arterial wall distinguishes these vessels from the vasa vasorum of the aortic wall. For since intravascular tension determines vaso-constriction in systemic arteries, the volume of blood circulating in the nutrient arterioles of the aortic wall is in an inverse ratio with the lateral pressure of the aortic stream, while the volume of blood in the nutrient arterioles of the cardiac wall is in a direct ratio. Therefore, during periods of high blood pressure, the influences at work upon the aortic wall are katabolic, while those at work upon the cardiac wall are anabolic. It follows that hypertrophy of cardiac muscle keeps pace with the circulatory requirements necessitated by advancing peripheral resistance, while hypertrophy of aortic muscle, if occurring at all, does not keep pace with these requirements.

In other words, while the normal ratio existing between the lateral pressure of the blood stream and the resistile capacity of the containing wall is maintained in the case of the ventricle, it becomes altered in the case of the aorta, and the walls of this vessel are rendered liable to strain.

The difference existing between the coronary arteries and the vasa vasorum of the aorta in the matter of their respective contractile powers thus affords an intelligible explanation of the pathological conditions underlying the symptoms of angina.

Moreover, since vaso-constriction is a protective action, the absence of it during periods of increased aortic pressure lays the coronary arteries open to strain and to diseases resulting from strain. Consequently the atheromatous and ossified state of the tissues of this artery, frequently observed in the subjects of angina after death, is to be regarded as a direct result of increased blood pressure, and as a concomitant condition rather than as a cause of angina.

London, S.W. WALTER VERDON, F.R.C.S.

GLOSSINA MORSITANS AND SLEEPING SICKNESS.

THE following brief note may be of interest in the consideration of the question as to whether *Glossina morsitans* may or may not be capable of conveying *Trypanosoma gambiense* in the same manner as *Glossina palpalis*.

During a recent investigation of the conditions obtaining in the northern part of the Katanga I was able to make the following observations:

1. Of natives who were living in villages in the vicinity of which neither *G. morsitans* nor *G. palpalis* was found—

283 men showed 17 cases of infection.
118 women showed no cases.
83 children showed 2 cases.

Thus of 484 natives 3.9 per cent. were infected.

2. Of natives who were living in villages in the immediate vicinity of which *G. morsitans* was to be found but not *G. palpalis*—

844 men showed 37 cases of infection.
372 women showed 1 case.
259 children showed 2 cases.

Giving a percentage of infection for 1,475 natives of 2.7.

3. Of natives who were living in villages in the immediate vicinity of which *G. palpalis* was to be found—

572 men showed 75 cases.
254 women showed 34 cases.
200 children showed 11 cases.

Giving a percentage for 1,026 natives of 11.7.

These figures show clearly that there is absolutely no evidence that the infection has spread more rapidly amongst those villages which are situated in *morsitans* areas than amongst those which are free from the presence of this fly.

The routes which are in common use amongst the natives in this part of the country pass through both *palpalis* and *morsitans* areas, though the former are very much smaller than the latter.

If *G. morsitans* is to be reckoned alike with *palpalis* as a transmitter of the disease, we should expect to find that the villages situated in *morsitans* areas would show at least as heavy a percentage infected as those in *palpalis* areas. For it is to be remembered that natives are surely bitten in this country one hundred times more often by the former than the latter fly.

These figures, however, show that the *palpalis* villages are far more more heavily infected than the *morsitans*, and the comparison becomes still more strongly marked if we eliminate the travellers—namely, the men—and consider the women and children, who represent more fairly the effects of the bites of the fly in the vicinity of the village. In every case where women or children were found to be infected in *morsitans* villages they had recently arrived at the village from some endemic area.

When it is borne in mind that trypanosomiasis has certainly been present to some degree in that country for three or four years, and that it is impossible in most parts for travelling natives to avoid being bitten hourly by the *morsitans*, it would seem impossible that no more evidence would have come to hand if this fly had been able to carry the infection.

It is, perhaps, wise to add that the part of the country from which my observations have been drawn is situated far to the north of the Katanga copper belt, and that the systematic inspection of natives entering the mineral belt from all quarters has revealed no single case of infection from the area referred to for the past four months.

ARTHUR PEARSON,
Chef du Service Médical de l'Union Minière du Haut Katanga.

Reports of Societies.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

Section of Anatomy and Physiology.

Friday, January 22nd, 1909.

T. H. Milroy, M.D., President, in the Chair.

Reaction Time.

The President said he wished to put before the members the result of some work which he had done on reaction time, and which he had undertaken in order to study the nature of mental fatigue. By reaction time was meant the period which elapsed between the initiation of a sensory stimulus and a volitional motor response on the part of the stimulated individual. One might estimate this time for hearing, sight, or touch, taking the same type of motor response as indicator in each case. When a series of reaction times was taken for any of the above-mentioned senses, it was observed that there were naturally distinct variations in the intervals between the sensory stimuli and the motor responses; but it might also be observed that in all cases, after a prolonged series had been taken, fatigue gradually sets in, as shown by a lengthening of the reaction time. This fatigue might affect the sensory paths, the sensory centres, the intermediate central paths between these centres, and the voluntary motor centres, or the motor path as far as the muscles themselves. In all cases a preliminary series of reaction time experiments was made in order to obtain an average normal result. Then, following such a series, various devices were employed in order to fatigue mainly the sensory, then, in another series, mainly the intermediate central paths, and in still another, the motor paths. From a careful study of a large number of experiments on the reaction time, it appeared as if in all cases the fatigue had its seat in the higher centres concerned in the direction of the attention towards the sensory motor reaction. These higher centres appeared to be required in order to link the various synapses of the higher physical and volitional motor centres more closely together, and thus facilitate the transmission of the nervous impulses. Thus, in their fatigue there was a delay in transmission, probably due to the higher resistance at the synapses, which were not so closely linked together as when the attention was freshly directed towards the act at the outset of the experiment.

After remarks by Professor Dixon, Professor Fraser, and Dr. Dawson,

Dr. Walter Smith said that, in judging of reaction time, an important factor was the duration of the stimulus. There was a great difference between the momentary impact of a visual stimulus and the relatively long duration of even the shortest sound. The subject was valuable to physicians and surgeons in estimating the phenomenon of knee-jerk, or the many manifestations of disordered and delayed sensations in hysteria. A most important point was the fatigue in the synapses between neurones. It was possible to draw an analogy between mental and digestive processes. In the nervous system they might recognize the possibility of a stimulus of stimuli just as there was in the digestive system a ferment of ferment.

Dr. Moorhead said he strongly believed that after a short rest following work one could turn to a new variety of work that required just as much attention, whereas if one turned to the same kind of work the same power of attention would not be appreciated.

The President, in reply, said the nature of impressions varied according to the stimulus. One's idea of certain sounds was based on past sensations and memories which called forth a different mental condition. There were certainly two paths between neural centres, one voluntary, the other formed by habit, but they could not say whether the linkage was always made by the one path, nor could they recognize where volition came in. His tests were for the purpose of finding where fatigue occurred, not to find what alterations in duration of stimuli produced—that had been carefully worked out by others. It was difficult to tell how change gave rest. Sight plus hearing would produce greater fatigue than one form of fatigue carried the whole way down.

The Sterno-clavicular Joint.

Dr. H. M. Johnston presented a communication on this joint, and exhibited drawings. The security of the joint was shown to depend mainly upon the costo-clavicular ligament, which was always tense, even when the upper extremity was hanging by the side. Owing to the attachment of this ligament to the clavicle being on the posterior-inferior aspect, elevation of the clavicle was permitted by a movement of rotation taking place, during which the anterior surface of the bone became directed somewhat upwards. The interarticular meniscus, intervening between the inner end of the clavicle and the sternum and first costal cartilage, and against which, owing to the laxity of the capsular ligament, the articular surface of the clavicle could move (upwards and downwards, forwards and backwards), serves rather as a "buffer," preventing shocks and jars being transmitted to the sternum, than as a ligament. To the sternum and costal cartilage (this meniscus intervening) the inner end of the clavicle seemed to be, as a general rule, firmly applied. During pulling, and when supporting the weight of the body by hanging from the hands, the clavicle was drawn somewhat outwards. This did not occur during reaching movements, as the contraction of the subclavius muscle prevented the clavicle being drawn away from the sternum as the scapula moved outwards and forwards.

Professor Dixon stated that he had seen the dissections made by Dr. Johnston, and was convinced that the explanations given of the function of the costo-clavicular ligament and of the subclavius muscle were the correct ones.

Specimens.

Professor M'Loughlin exhibited a specimen of *Dorsal subclavian artery* and one of *Duodenal diverticulum.*

Lantern Demonstration.

Professor Fraser gave a lantern demonstration of a series of slides showing (*a*) the living model from the front, the back, and the side, with the superior extremity in various positions; (*b*) a series of the head and neck, showing the various movements—flexion, extension, lateral inclination, and rotation to right and left; (*c*) a series of the trunk, showing its various movements—flexion, extension, lateral inclination, and rotation to right and left; (*d*) a series of the lower extremity, showing the various degrees of flexion from the outer and inner aspects of the limb.

Edinburgh Medico-Chirurgical Society.—At a meeting on Wednesday, February 3rd, Dr. G. A. Gibson and Dr. W. T. Ritchie read a paper on a historical instance of the *Adams-Stokes syndrome due to heart-block.* A distinguished physician had enjoyed during a long life very excellent health, excepting that during his youth some suspicion had been aroused by the condition of the lungs, which led to his spending a winter in Rome, immediately after graduation. In 1899, being then 75 years old, he had a serious attack of influenza, and in the following year he retired from the positions which he occupied, and settled in Edinburgh. Until his house was ready he lived in one of the suburbs, and used to go backwards and forwards by train. In September, 1900, when in the train going into Edinburgh, he was suddenly attacked by unconsciousness and muscular rigidity. He was seen shortly afterwards by Professor Wyllie and Dr. Gibson, and the condition was then found to be one of great prostration. Consciousness had returned, but the patient was very dull and listless. The pulse at the wrist was only 6 per minute, the apex beat being the same, and there were no missed beats. The first sound was quite distinct, and was followed by a clear, ringing second sound, but between these were other feebler sounds (to be referred to later). In the course of a few hours the attack passed off, and the pulse returned to its normal rate, between 60 and 70, with complete disappearance of the nervous symptoms. A slight attack occurred in St. Paul's Cathedral, London, in October, 1900, and again in November, 1901, in his own house. A more serious and more prolonged seizure was experienced at Christmas, 1901, after which the normal was again reached. This condition of matters continued until July, 1902, when there was a sudden attack at church, with a pulse-rate of 16, and syncopal symptoms. In February, 1903, another seizure occurred in a tramway car, and the same afternoon another attack came on in the street. The condition of the pulse during these attacks was not observed, as he was not seen by his medical attendant until afterwards. During the same month he

went to London in order to attend the meeting of the General Council, and had one or two attacks of syncopal character, but the pulse was not observed to be below 40 at this time. Towards the end of the month he returned to Edinburgh, and was found to be very faint; his pulse then was 40. In March there were several attacks, and the pulse fell to 32 per minute. During the rest of his life the pulse was never found to be above 34, or below 28; it was almost invariably 32 per minute. From March, 1903, until June, 1907, when he died, there was no syncopal or epileptiform attack. The patient manifested the keenest interest in his own condition, and encouraged every inquiry into the nature of his affection. He was seen by many distinguished men from time to time, all of whom expressed their views in regard to the nature of the disease. From first to last there was a good deal of gastro-enteric catarrh, with dilatation of the viscera and considerable constipation. There never was any renal affection, and the respiratory organs were wonderfully healthy, with the exception of slight impairment of the percussion sounds at the apices, accompanied by harsh breathing. After the cessation of the attacks of fainting and palpitation there never were any nervous symptoms. The patient slept well, and every intellectual faculty was alert to the end of life. The circulatory organs presented features of the greatest interest. There was a distinct cervical venous pulse of the auricular type; the apex beat was slightly further to the left than usual; the impulse was well sustained and perfectly regular, with a usual rate of 32; the arteries were somewhat thickened, but not in any way resistant; the condition of arterial pressure will be mentioned later. Percussion of the heart showed some enlargement, there being some dilatation with hypertrophy. On auscultation the first sound was replaced by a loud, high-pitched murmur, heard over the whole praecordia, and particularly distinct at the apex; the second sound was loud and ringing, especially about the aortic cartilage. Between the incidence of the systolic murmur and its attendant second sound there could always be heard perfectly distinct sounds, usually two in number, which were by no means loud; these were assumed to be caused by the pulsatian of the auricles. Careful comparison of tracings taken from the jugular veins, the brachial and radial arteries, and the cardiac apex, amply confirmed this impression, as there were always two, if not three, elevations made by the movements of the cervical veins for each ventricular impulse. It was perfectly clear that the cause was one of partial, or incomplete, heart-block, as there was no absolute dissociation of ventricular and auricular movements, the ventricular pulsation being immediately preceded by an auricular impulse, although the interval between auricular and ventricular pulsation was not always exactly the same. In other words, the conductivity varied considerably. At a later period the condition seemed to pass into complete block. It was very interesting to find that the arterial pressure was extremely high during the systolic period, reaching as much as 230, and falling to 75 during the diastolic period. A comparison of all the phenomena with similar cases which have been under our care has shown us that it was a very interesting example of the Adams-Stokes syndrome due to heart-block. The termination came with dramatic suddenness after the patient had passed through a period free from any disturbing symptoms. At the *post-mortem* examination, which was expressly ordered by himself, the heart was found to be enlarged, measuring $17 \times 12 \times 11$ cm. The circumference of the heart 2 cm. below the auriculo-ventricular groove was 37.5 cm.; the subepicardial fat was abundant; the cavities were all dilated and hypertrophied; the hypertrophy of the taenia terminalis was well marked. In the right ventricle there were patchy thickenings of the endocardium; the tricuspid valve showed some fibrous thickening, but no calcification; the pulmonary artery and valve were healthy; the segments of the mitral valve were thickened and calcareous, the basal part of the aortic cusp being particularly affected; the chordae tendineae were somewhat thickened, but not shrunken, and the fibrous change extended into the apices of the papillary muscles; the endocardium showed patchy thickening, greyish-white fibrous areas being seen on some of the columnae carneae; the cusps at the aortic orifice were all thickened, but not shrunken or adherent to one another, and their basal parts were calcareous; the sinuses of Valsalva were dilated; the aorta was atheromatous, as were also the coronary arteries whose branches in the heart wall were seen as greyish-white lines. A portion of the septum of the heart containing the auriculo-ventricular node and the auriculo-ventricular bundle was examined microscopically, and a similar comparative study was also made of the same region in healthy hearts, examined in serial sections. The examination showed that there was a dense fibrous transformation spreading from the aortic cusp of the mitral valve into and largely replacing the normal tissue of the auriculo-ventricular node and first part of the bundle. The fibrous tissue was dense, and presented irregular areas of calcification, so that the appearances differed very strikingly from those presented by the interlacing network of fibres in the node and all the corresponding parts of the healthy heart. The auriculo-ventricular bundle further down, nearer the membraneous septum, and towards its bifurcation, showed less fibrosis and no calcification, although calcareous deposits were found in the adjacent fibrous tissue. The tissues at the junction of the superior vena cava and right auricle were also examined microscopically; the most important change in this region was found to be a pronounced fatty infiltration.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—At a meeting on February 3rd, Dr. P. BOOBBYER, President, in the chair, Dr. R. D. MAXWELL, Obstetric Registrar to the London Hospital, delivered an address on the *Operability of cancer of the cervix in the light of recent operative technique*. Pointing out how frequently an operation showed the disease to be far more extensive than had been anticipated, he urged the need for examination of doubtful cases under anaesthesia, with exploration and microscopic examination of the cervical mucosa. Comparing the results of operation by the vaginal route with abdominal panhysterectomy (implying complete segregation of the cancer) as advocated by Wertheim, cure was much more likely in the case of the more radical abdominal operation, and the pioneers in this particular field deserved credit for not being deterred by a high immediate death-rate at first associated with it. At the same time he thought such an operation ought not to be performed after the age of 60. Briefly alluding to the vesical and other urinary complications associated with convalescence from Wertheim's operation, Dr. Maxwell pressed the importance of systematic education of the female population in the early symptoms of cancer, so that cases might come under expert notice much earlier than was the rule at present. As the result of the crusade against cancer in Germany initiated by Winter, of Königsberg, the percentage of operable cases had there materially increased; and similar good might result in the United Kingdom from the pamphlets on cancer placed in the hands of registered midwives during the last two years.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY—At a meeting on January 22nd, Dr. W. H. CHEETHAM in the chair, Dr. MAXWELL TELLING, in a paper on the clinical relationship of *Erythema nodosum*, adduced evidence to show that this disease was not one of the manifestations of the rheumatic infection. He also contended that it was not a variant of the erythema exudativum multiforme of Hebra, but that it was a specific disease allied to the acute eruptive fevers. Dr. MYER COPLANS showed organisms of *Vincent's angina* obtained in each of four outbreaks within the past three months in Leeds and the East Riding. The organisms were spirilla and fusiform bacilli obtained from cultures of throat swabs on alkaline-glucose-serum slants (1 per cent. glucose). Mr. B. G. A. MOYNIHAN showed an appendix removed within three hours of the onset of an acute attack of severe pain associated with an extremely rigid abdominal wall. The symptoms suggested a *Perforation of the appendix*, but the condition found was one of thrombosis of the vessels in the distal part. The distal part of the appendix, the territory of the thrombosed vessels, was a deep purple colour, the remainder being pale. This condition, it was suggested, was the early stage of which gangrene and perforation are the later stages. Dr. E. F. TREVELYAN showed (1) a boy aged 14 with *Disseminated sclerosis*, which the parents attributed to an injury sustained seven months ago. Gait slightly

reeling; speech drawling; aimless laughing; nystagmus; convergence deficient; intentional tremor; knee-jerks exaggerated with left foot clonus. There had been several epileptiform seizures. (2) A girl aged 24 with *Epilepsy*. In at least two fits there had been a precursive motor aura, the patient being impelled to run forward before unconsciousness supervened. Mr. J. F. DOBSON showed a *Heart with stab wound* from a butcher's knife penetrating the left ventricle. The wound was sutured with two catgut stitches with great immediate improvement; however, death resulted from sepsis sixty hours after operation. Mr. J. STEWART showed a specimen of *Tubal gestation* removed from a patient, aged 24, who was suckling her second child, aged 5 months. Mr. MICHAEL TEALE showed a child with an opacity of the greater part of the capsule of the lens of each eye, probably due to a persistent remnant of the embryonic capsule of the lens.

LIVERPOOL MEDICAL INSTITUTION.—At a meeting held on January 28th, Mr. T. H. BICKERTON, President, in the chair, Mr. THELWALL THOMAS read notes on two cases of *Actinomycosis* of the cervico-facial type. The first occurred in a housemaid who had nothing to do with cattle; the disease was very severe, and involved the facial bones. The second was that of a young man who looked after a horse and frequently chewed corn. Both cases commenced as gum-boils. The treatment consisted in free incisions, packing the wounds with gauze soaked in tincture of iodine, and the internal administration of potassium iodide and iodipin. Both cases recovered after an illness lasting many weeks. Mr. MONSARRAT referred to a case under his care in which the infection was pharyngeal in origin, and closely resembled tubercle. In spite of energetic treatment, including a vaccine, the patient died from extension to the vertebrae. Mr. DOUGLAS-CRAWFORD mentioned two cases which he had reported two years ago—one of the cervico-facial type, and the other which had attacked the abdominal wall; both cases were treated by excision, local application of iodipin, and potassium iodide internally. Both ultimately recovered. Dr. BAKER YOUNG described a case of *Muscarin poisoning*. The symptoms were those of catarrhal jaundice, followed by peripheral neuritis and paroxysmal dyspnoea. Atropin was the drug chiefly employed, but the case ended fatally. Mr. LITLER-JONES reported two cases of *Diaphragmatic hernia*. One followed a perforating wound of the left wall of the chest; a portion of the eighth rib was exised, the diaphragm repaired, and the patient ultimately made an excellent recovery. The second case was that of a child who presented symptoms of intestinal obstruction. The hernia was reduced through an abdominal incision, but the patient died some days later from severe haematemesis. Drs. RUNDLE and STENHOUSE WILLIAMS read a note on the *Serum treatment of diphtheria*, with special reference to anaphylaxis.

MEDICAL SOCIETY OF LONDON.—At a clinical meeting on February 8th, with Mr. CHARTERS J. SYMONDS, F.R.C.S., in the chair, the following cases were shown:—Dr. A. F. VOELCKER: A case of widespread *Peripheral neuritis* of uncertain origin exhibited to the Society on November 9th, 1908, as a doubtful case of diffuse glioma of the cord; also a case of *Hydatid cyst of the liver successfully treated by drainage*. Dr. G. A. SUTHERLAND: A case of *Generalized paralysis* of uncertain origin in a boy 3 years of age, admitted to hospital on October 2nd, 1908, after an indefinite illness of six days' duration, characterized by loss of appetite, abdominal pain, and constipation, when he lay in a curiously apathetic condition and made no attempt to move arms or legs. There was a frequent, loose, and toneless cough. All the extremities were flaccid and paralysed, very slight power being present in the upper extremities only. The knee-jerks were absent and a doubtful flexor response was elicited on the left side. The abdominal and cremasteric reflexes were absent. There was rectal and vesical incontinence. The diaphragm was apparently quite paralysed. After twelve weeks he was now definitely improving, and was putting on weight and gaining power in all the paralysed muscles. Mr. P. MAYNARD HEATH: A case of *Typhoid periostitis of the femur*. Dr. F. PARKES WEBER: A case of *Acquired chronic acholuric jaundice with splenomegaly*; a case of *Splenomegaly*, due to inherited syphilis (?); and a case of *Raynaud's gangrene* in a malarial subject. Dr. WILFRID HARRIS: A case of *Syringobulbia*. Fifteen years ago the patient had haematemesis. He had since been subject to pains in the right side and shoulders and the back of the head. There was marked hemiatrophy of the right half of the tongue and coarse nystagmus on looking to the right. In regard to sensation there was complete loss to pin-prick, heat and cold over the second, third, and fourth cervical root areas on both sides. Mr. CHARTERS J. SYMONDS: A case of *Congenital dislocation of the hip four years after Lorenz's operation*; and a case of *Stricture of the oesophagus*, showing the method of treatment by a long rubber tube. Dr. W. H. CROLY (introduced by Mr. L. Eliot Creasy): A case of *Epidermolysis bullosa*. Mr. T. H. KELLOCK: A case of *Deformity of long bones in a boy* aged 6 years. There was considerable laxity of the joints, chiefly noticeable at the right hip, which it was possible to rotate outwards to a very abnormal degree. Skiagrams showed bending of the shafts of the long bones and great irregularity of ossification at the epiphysial ends. The pelvis was a good deal deformed, approaching the triradiate form. Dr. F. S. PALMER: A case of *Spinal caries followed by pressure paraplegia*, in which considerable recovery followed laminectomy.

ASSOCIATION OF REGISTERED MEDICAL WOMEN.—At a meeting held on February 2nd, Dr. MAY THORNE in the chair, Miss GARRETT ANDERSON gave the history of a case of *Carcinoma of the colon*. The patient was a woman aged 59, in whom the growth had been felt per vaginam as a small movable mass just above the brim of the pelvis. Eight inches of the sigmoid were excised through an oblique incision in the right inguinal region. As the patient's condition was too serious to allow an anastomosis to be made, the distal end of the bowel was closed, and the proximal end was brought out in the colotomy wound. A Paul's tube was used for the first few days. She made a good recovery, and was shown wearing a Pengely-Bailey belt, which was recommended as being clean and easy to manage. The parts removed at the operation showed an annular growth of columnar cell carcinoma. Miss GARRETT ANDERSON also showed, on behalf of Miss Cock, a woman, aged 45, who for three years had noticed a small *Lump in the left breast*. It was hard and was fixed to the skin, and there were some small hard glands in the axilla. The swelling was considered to be a scirrhus, though the history was somewhat long. The question was raised whether there was a secondary growth in the sacrum as the patient complained of severe pain in that region. Miss DOBBIE showed a girl with an *Osteoma growing from the upper border of the scapula*. The scapula was also elevated, owing to absence of the lower part of the trapezius, and there was scoliosis with a triple curve. Mrs. SAVILL showed a case of *Scleroderma*. Four years ago the patient had been treated daily, over a period of two years, with x rays, and her left arm presented the typical appearance of x-ray dermatitis, with scarring (keloid in places), tetangiectases, and two painful ulcers. The PRESIDENT showed (for Mrs. Scharlieb): (1) A *Cystic tumour of the uterus* with the microscopic characters of an endothelioma. The patient had been aware of the existence of a tumour for eleven years. (2) A *Malignant adenoma infiltrating the wall of the uterus* as far as the peritoneal coat. There was a history of irregular and profuse menstruation for three years, and, for a shorter period, of loss of flesh, anaemia, and a foul vaginal discharge. The patient died of heart failure thirty hours after panhysterectomy, death being preceded by vomiting of tarry material, possibly due to secondary growths in the stomach. (3) An *Epithelioma of the vagina*. The patient from whom the specimen was removed had worn a ring pessary for twelve years, and seven months before the growth was discovered the pessary had to be forcibly extracted, as the vaginal tissues had grown over it.

THE State Children's Association has issued a leaflet explaining the provisions of the Children Act, 1908. The leaflet (price 1d.) and fuller information regarding the Acts affecting children can be obtained on application to the Secretaries, 58, Old Broad Street, E.C.

Reviews.

VACCINES AND IMMUNITY.

SINCE Professor Paul Ehrlich first enunciated his theory—familiar now as the side-chain theory—by means of which he endeavoured to provide an explanation of the processes by which immunity is regulated, various efforts have been made to make the details of the theory intelligible to those interested in the endeavour to bring it into closer touch with the various pathological problems connected with the study of medicine. Continental workers, with a whole-hearted acceptance of the theory as a working hypothesis, have made rapid strides in the direction of further investigation along lines indicated by Ehrlich, with the result that most important facts have been slowly but surely accumulating. These investigations are scattered broadcast in numerous periodicals, and writers like Aschoff, Römer, Kolle and Wassermann, and more recently Kraus and Levaditi, have endeavoured to bring these investigations together in monographs and textbooks, so presenting the advances made as a result of Ehrlich's fundamental theoretical deductions. For reasons which are not far to seek, these results have hardly found a just recognition in English textbooks of medicine and pathology. First amongst these reasons is not the cumbrous terminology used, nor the speculative arguments advanced, but very largely hesitation on our part, due probably to our innate dislike for involved theoretical discussion. A short monograph, written by Dr. SCHATILOFF,[1] is published just at a time, however, when the medical world has realized that it can no longer remain satisfied with the old pathological shibboleths which were based on the findings of morbid anatomy. We are no longer satisfied with the expressions "cloudy swelling," "colloidal degeneration," and "amyloid transformation," for these terms merely describe the shipwreck produced by processes which we do not understand. No doubt Sir Almroth Wright's work on opsonins has opened our insular eyes more widely to the principles of immunity than all the advances made by Ehrlich and his school, if for no other reason than that the theory of opsonic reaction to infection is a much more simple and demonstrable one. No doubt it is, at present at least, practically impossible to find a place for opsonins in Ehrlich's scheme of immunity, but this is no excuse for neglecting to appreciate the more recent advances based on his theory. Dr. Schatiloff devotes the first thirty pages of his publication to a most successful attempt to render Ehrlich's theory more intelligible, and we must confess to great assistance derived from the discussions in this part of the book, and from the most serviceable diagrams which pictorially represent what is too often difficult of comprehension. The meaning of such terms as "toxones," "toxoids," "lysins," "complementoids," and "precipitinogens," is no longer obscured by terminological difficulties. Even if Dr. Schatiloff had written no more than these first thirty pages, he would deserve great credit, for his efforts, if we are not greatly mistaken, will help the reader to a thorough grasp of the difficulties which attend this new theory. No doubt there is still very much to be done in filling the obvious gaps in our knowledge, even when helped by the most recent advances based on Ehrlich's hypothesis, but the writer has wisely shunned what is still in dispute, and gives to the reader a survey only of what is generally accepted. We should signally fail in our duty, however, if we did not call the reader's attention to the admirable work contained in the last fifteen or sixteen pages, for within these narrow limits Dr. Schatiloff has contrived to give the reader full details of a reaction of the serum of infected patients which, already acting as a touchstone, is showing the existence of infective agents which so far have baffled all detection—for example, the acute infections which cause measles, whooping-cough, scarlet fever, and the like. For once we meet with a German book which disregards all references, and is satisfied to give the facts only; this is disappointing in some ways, but the gain in terseness is very great. The amount of work which has followed upon the important results published by Bordet and Gengou could not be given fully in the small compass of this part of the book, but the process itself, as originally planned by Bordet and Gengou, and the corrections and improvements suggested by subsequent workers, are all fully set out, notably those initiated by Wassermann in his application of the test to the investigation of syphilis.

Various well-known authorities of the Pasteur Institute in Paris have collaborated in the publication of a volume on bacterial therapy, vaccination, and serumtherapy,[2] forming part of the *Bibliothèque de Thérapeutique*, edited by MM. GILBERT and CARNOT. Metchnikoff gives a fairly full and reasoned account of intestinal therapy by the ingestion of acid-forming bacteria, and considers the varieties of bacteria which may be most suitably employed for this purpose. He seems a little angry with the people who argue that this treatment may be dangerous on the ground that in rabbits the experimental administration of lactic acid produces degenerative changes in the vascular system, and remarks sarcastically:

> Applying to mankind the results of experiments on rabbits it would be necessary to conclude that man is extraordinarily susceptible to chicken cholera, that he is absolutely refractory to recurrent fever, and that he cannot contract syphilis except when the virus is inoculated in the eye.

True, the constitution of a rabbit is different from that of a man; but it does not follow that these experiments on rabbits are worthless; whilst not amounting to a refutation of Metchnikoff's favourite doctrine, they at least raise a point demanding further consideration. Sacquépée's lengthy article on vaccination against small-pox is good on the whole, but we are surprised that he does not attach more importance to the purification of vaccine lymph by the use of chloroform; in looking over his article the only reference which we have found to this method is a single line on p. 67. The articles on vaccination against hydrophobia by Remlinger, and on diphtheria antitoxin by Louis Martin, are both valuable, but do not call for any special comment. We note that Vaillard and Dopter, writing on the serumtherapy of bacillary dysentery, do not think much has been gained by the efforts made to produce a polyvalent serum.

> The necessity for a polyvalent serum does not seem to have been demonstrated hitherto, at least so far as our own practical experience goes. Although for the immunization of our horses we have employed solely cultures of the Shiga-Kruse type, all our dysentery cases, whether produced by the Shiga-Kruse or by the Flexner bacillus, have been influenced in an equally favourable manner.

The article on the serumtherapy of epidemic meningitis is by Wassermann and Leber of Berlin. These authorities regard the specific serum as an important therapeutic agent when inoculated intraspinously, and quote a recent epidemic in which the mortality amongst the untreated cases was from 78 to 80 per cent., whilst amongst the cases which received large doses of the serum the mortality did not rise above 12 to 15 per cent. Dujardin-Beaumetz, to whom is entrusted the article on serumtherapy and vaccination in bubonic plague, makes the significant remark that "the true prophylaxis which is effective against plague is the extermination of rats, the sole propagators of this disease." We are disappointed to find that the chapter on serumtherapeutics in poisoning by snake venom, written by Calmette, is cut down to the meagre space of nine pages. Calmette is one of the greatest living authorities on this subject, which is one deserving of lengthy treatment, and we think that the value of the volume as a whole would have been increased if the article had been expanded. The editors of the book are to be congratulated on having secured the services of so many eminent writers, and we look forward with interest to the appearance of further volumes in the same series.

Drs. KRAUS and LEVADITI, who are editing a treatise on the technique and method of immunity investigation,[3]

[1] *Die Ehrlichsche Seitenkettentheorie, erläutert und bildlich dargestellt* [Ehrlich's side-chain theory explained and diagrammatically represented]. By Dr. P. Schatiloff. Jena: Gustav Fischer. 1908. (Roy. 8vo, pp. 48, Tab. 7. M. 2.)

[2] *Bibliothèque de Thérapeutique.* Publiée sous la direction de A. Gilbert et P. Carnot. Médicaments microbiens. *Bactériothérapie, Vaccination, Sérothérapie.* Par les Docteurs Metchnikoff, Sacquépée, Remlinger, Louis Martin, Vaillard, Dopter, Besredka, Wassermann, Leber, Dujardin-Beaumetz, Salimbeni, Calmette. Paris: J. B. Baillière et Fils. 1909. (Post 8vo, pp. 500, 26 illustrations in the text. Fr. 8.)

[3] *Handbuch der Technik und Methodik der Immunitätsforschung.* Herausgegeben von Professor Dr. R. Kraus and Dr. C. Levaditi. Erster Band. Zweite Lieferung. Jena: Gustav Fischer. 1908. (Sup. roy. 8vo, pp. 369-1138, 2 coloured plates, 1 chart, and 94 illustrations in the text. M. 20.) Zweiter Band. Erste Lieferung. (Pp. 278, with illustrations. M. 8.)

have issued the second part of the first volume. The article on vaccination against variola, by Dr. Gustav Paul of Vienna, covers the ground fairly well, but is written very conspicuously from the German point of view, and may appear to English readers to treat work done in this country less fully than it deserves. Dr. Paul does not think that lymph purified by the chloroform method can be regarded as reliable for general use; and there is no necessity, he argues, to resort either to this or to any other method for the rapid elimination of extraneous organisms, provided that proper precautions are taken to produce the lymph in a comparatively pure condition. For this purpose he recommends the use of a protective covering (*Tegminverband*) which is applied over the area where the calf has been inoculated; this procedure has been followed in Vienna since 1897. Perhaps Dr. Paul would attach more importance to the chloroform method if he studied it more thoroughly. In the article on protective inoculation against typhoid fever by Dr. Friedberger, the most noteworthy feature is the full account given of Wright's work and the statistics on this subject. In the next chapter, on preventive inoculation against cholera, Dr. Friedberger betrays a little too much anxiety to pick holes in Haffkine's brilliant work; he informs us that "the essential nature of cholera-immunity" was first brought to light by certain German investigators. Similarly the chapter on plague prophylactics, by Drs. Wassermann and Leuchs, would have been improved by a fuller recognition of the work done under the auspices of the British Government. There are several chapters on tuberculosis. Dr. Löwenstein contributes two on human tuberculosis, dealing with the therapeutic and diagnostic uses of tuberculin; Dr. Römer writes on tuberculin testing and vaccination in bovines; and Dr. von Pirquet discusses the cutaneous and conjunctival reactions with tuberculin. These articles all contain useful collections of data, but do not attain to a very high standard of impartial criticism. Dr. Römer's articles, for example, reveal a strong personal bias in favour of the Behring school. The great merit of the book lies in the very full and carefully written descriptions of technical methods, and in this respect its utility will be highly appreciated by all workers on immunity. In discussing theories some of the writers are less successful. They rely too much on the bald "historical" method of presenting a long string of persons' names with a particular theory or opinion attached to each; and when they attempt to criticize, the evidence of impartial judgement is often obscured by special pleading in favour of a particular point of view. The first section of vol. ii will prove of great service to those engaged in the practical work of antitoxin preparation. Professor Kretz, of Prague, describes the technique of producing and collecting diphtheria antitoxin from horses, and Dr. Levaditi gives a very interesting account of the preparation of antibacterial and antitoxic immune serums from large animals in the serum department of the Pasteur Institute in Paris. The testing and standardization of diphtheria antitoxin is dealt with by Dr. Madsen, of Copenhagen; the chapter on tetanus antitoxin is by Drs. Eisler and Pribram, and includes a short discussion of the employment of this antitoxin for prophylactic and therapeutic purposes; and the preparation and employment of antitoxic serum in cases of dysentery caused by the Shiga-Kruse type of bacillus is fully described by Dr. Doerr, of Vienna. Another important article in the volume is Professor Calmette's account of the preparation of antitoxins against snake poisons.

In the second edition of his *Vaccine Therapy and the Opsonic Method of Treatment*[4] Dr. ALLEN has incorporated a large amount of new material and has increased the bulk of the volume by nearly a hundred pages. A special feature of the new edition is the expansion of the chapter on infection by the tubercle bacillus. The author attaches high importance to the differentiation of tubercle bacilli found in the human body into "human" and "bovine" types, and for general clinical purposes recommends the use of a vaccine prepared from a mixture of these two types of bacilli. Unfortunately an element of confusion arises owing to the fact that certain clinical pathologists make use of these terms "human" and "bovine" in ways which would not be acceptable to Koch and other high authorities who have established this differentiation on a definite basis of bacteriological experiment. Put briefly, what the bacteriologist means by a "bovine" strain is one which grows poorly on artificial culture media, and is of high virulence for rabbits, in contrast to which the characters of "human" strains are abundant growth on artificial media, and relatively low virulence for rabbits. When tested by these criteria, very nearly all the tubercle bacilli which have been obtained from human tuberculous lungs have been found to be of the "human" type. Dr. Allen, however, appears to attach importance to certain clinical pathologists who, relying on tests other than those mentioned above, have arrived at very different conclusions. For example, he quotes one observer who from "a most careful study" of 112 cases of pulmonary phthisis formed the opinion that 68, or 60.8 per cent., of these cases "showed a symbiotic working of the human and bovine types," and that 6 cases, or 5.3 per cent., "had almost exclusively bovine bacilli." We must remind Dr. Allen that the majority of bacteriologists are not prepared to concede that the *typus bovinus*, as defined by Koch and subsequent workers, occurs in the human lungs with anything like the frequency which a few physicians and opsonists imagine.

[4] *Vaccine Therapy and the Opsonic Method of Treatment.* By R. W. Allen, M.D., B.S. Second edition. London: H. K. Lewis. 1908. (Demy 8vo, pp. 256. 7s. 6d.)

INJURY AS A CAUSE OF NERVOUS DISEASE.

ACCURATE knowledge of the place and importance of bodily injury in the causation of diseases of the nervous system is of great importance to every medical man who may be called upon to give evidence on this point in courts of law. The conclusions of a critical survey of over 1,500 cases of this kind on which judgement was given in legal courts, all of which cases had come under the personal observation either of Dr. Kurt Mendel or of his father, Professor E. Mendel, of Berlin, should, therefore, prove of use, particularly in these days of frequent application for compensation under the Workmen's Compensation Act. Dr. KURT MENDEL'S volume[5] on injury in the etiology of nervous diseases, large as it is, is yet restricted to the discussion of the effect of trauma in general paralysis, cerebral tumour and abscess, apoplexy and meningitis, tabes dorsalis, multiple sclerosis, syringomyelia, myelitis, amyotrophic lateral sclerosis, and progressive muscular atrophy; progressive muscular dystrophies and neuritis; paralysis agitans, exophthalmic goître, acromegaly, and epilepsy, and does not enter into the great field of traumatic neurasthenia and hysteria which, on account of their importance, will be treated in a separate volume to be published later. Each of the diseases above mentioned is treated in a separate chapter, illustrated by clinical notes and the judicial verdicts obtained. Few subjects are more hedged by difficulties. Apart altogether from the difficulty of duly apportioning the relative importance of the influence of trauma on the one hand, and predisposition, congenital or acquired disposition, on the other, there are difficulties as to matters of evidence, such as the proof that the individual concerned was sound in health up to the day of the accident; that other etiological factors besides trauma were absent; the time relation of the injury to the appearance of the disease, and the amount of injury received. To a certain extent these questions are of scientific and not forensic importance, for in German courts it is not necessary to prove that the injury was the sole factor; also the deepening of an already existing disease by accident has the same value as its traumatic production *de novo*; and further, in practice the court is content with a considerable degree of probability and when in doubt is in favour of a traumatic origin. For the author's discussion we must refer inquirers to the book itself, which is well worth reading, and need only give here his main conclusions. After the general statements that any injury, and in particular that of the skull or spine, may increase an existing nervous disease, or prejudice its course, or stir up a latent disorder, and that an injury may bring about a *locus minoris resistentiae* on which soil other causes may become operative—for example, head injury in syphilitics may

[5] *Der Unfall in der Ätiologie der Nervenkrankheiten.* By Dr. Kurt Mendel. Berlin: S. Karger. 1908. (Sup. roy. 8vo, pp. 189. M. 8.)

determine general paralysis, or in tuberculous subjects, tuberculous meningitis, etc.—Dr. Mendel considers (1) that the following diseases: General paralysis, brain tumour, tabes dorsalis, multiple sclerosis, amyotrophic lateral sclerosis, progressive muscular atrophy, progressive muscular dystrophy, paralysis agitans, Basedow's disease and acromegaly, being of endogenous nature are never of purely traumatic origin, however severe the injury; (2) that polyneuritis and brain abscess may be the direct result of injury, in the latter case, of course, in association with septic infection; and (3) that apoplexy, meningitis, myelitis and epilepsy may be brought about in completely sound individuals with no disposition to any of these diseases, as the result of injury, and may thus occur as purely traumatic diseases.

The considerable damage—amounting even to large losses of substance in certain parts, for example, in the frontal and parietal convolutions, etc.—which the brain can sustain without consequent mental or indeed any symptoms, often occasions surprise, and has led to the description of these parts as "dumb" areas, *stumme Gehirnteile*. Not long ago Professor BURR published an able paper[6] in which he maintained that head injury, no matter how severe, never produces insanity except in predisposed individuals. Possibly Professor Burr's view is an extreme one, but in any case the absence of symptoms, say in cases of cerebral tumour, and the restoration and mode of restoration of functions after extirpation of the cortical areas subserving these functions, as demonstrated by Hitzig, offer a wide and fruitful field for inquiry. For this reason, a pamphlet on the restoration of function in diseases of the brain,[7] reprinted from the *Monatsschrift für Psychiatrie und Neurologie*, Bd. xix, Heft 1, by Professor ANTON, the successor of Wernicke at Halle, will be read with interest. Professor Anton shows that there dwells in the human central nervous system a wide capacity for adaptation, an innate power of self-regulation, not only towards stimuli and effects from without, but with regard to internal disturbances of the cerebrum. The explanation of this power of adaptation or ability to take on vicarious function is given in a sentence, when Professor Anton says that "the constituent elements of the central nervous system possess greater possibilities of function than normally come into action; as is proved whenever another part is abolished." Further, the nearer the injury is to the periphery the more restricted the possibility of vicarious action, or the higher the injury the greater the possibility, and consequently vicarious function in a case of cortical injury can be most easily assumed by neighbouring parts, the symmetrical parts in the other hemisphere and the subcortical centres. This compensatory action, however, if sufficiently pronounced, takes effect at the expense of other functions; other brain areas become more excitable, possibly also more easily fatigued; the sound areas undergo to some extent an alteration of function, and there is, in fine, a readjustment of the equilibrium of the whole, corresponding to the production of a new cerebral type. We have thought it sufficient to give here only the guiding principles expounded by Professor Anton in his too brief paper; for the author's valuable references to experimental cases, for the expression of this principle of vicarious function in symptomatology and for the practical lessons to be drawn therefrom we must refer readers to the work itself.

THE BRAIN IN RELATION TO THE SKULL.

THE atlas[8] prepared by Professor HERMANN, of Erlangen, consists of seven sections illustrating the topographical anatomy of the brain and skull, and should prove of great value to anatomists, surgeons, and neurologists.

Professor Hermann has devised a careful and ingenious means of accurately determining by section and photography the relation of the skull to its contents, and gives 69 artistically-executed coloured photographic plates, representing the skull with its sutures, the dura mater with its vessels, the convolutions and fissures, and a successive series of sections through the brain from above downwards, lateralwards, from before backwards, and from behind forwards. A study of these plates enables one to obtain a correct knowledge of what structures an instrument would pass through, if it travelled straight or obliquely through any part of the skull. Moreover, some idea of what structures a bullet would damage could be arrived at after locating its position in the skull by a skiagram.

The plates have either a transparency in front, naming all the structures seen through in a clear and comprehensive manner, or a diagrammatic tracing opposite with explanations of the relations of the calvarium and its sutures to all the subjacent parts or the relation of the various structures of the brain to the base of the skull. Plates 63, 64, 65, and 66 show projections of the lateral ventricles from above, from in front, from behind, and from the side; the situation of the principal branches of the middle meningeal artery is shown. As the author remarks, these plates should be useful as a guide in the operation of puncture of the lateral ventricles. Section 7 contains some exceptionally fine plates, which should be very useful to the surgeon.

The line system of Krönlein is adopted for craniocerebral topography, and in plate 67 the skull is seen exposed, and the lines are exhibited on the surface, together with the situation of the fissure of Rolando and the Sylvian fissure, with its branches as determined by this method. The next plate, 68, by ingenious arrangement and photography, demonstrates the exact relation those lines which were seen on the external surface bear to the convolutions and fissures of the brain after removal of one-half of the cranium and the membranes. The last plate, 69, shows the relation of Krönlein's system to the structures exposed when one-half of the brain is removed by mesial section through the corpus callosum, stem of the brain, and the cerebellum. No medical library of importance should be without a copy of this valuable pictorial anatomy of the brain in relation to the skull.

SURGERY.

Modern Surgery, by Dr. ROSWELL PARK,[9] is an attempt to epitomize the modern principles and practice of surgery for the use of those who require such a condensed presentation. The author covers a very wide field within a comparatively small compass, and has studied the art of compression to some purpose. Some day textbooks of surgery will still further unload matter which they are not really called upon to supply, and get rid of chapters on inflammation, infection, and general parasitology which belong to treatises on general pathology. Parts I and II of the first volume treat of surgical pathology and surgical diseases; Part III of surgical principles, methods, and minor procedures. This last part is rather shapeless, and facts are not so arranged that the reader gathers clear ideas as to what methods the author recommends. Nor can some of the methods detailed be called modern—for example, the intraspinal injection of cocaine. No surgeon who has any experience of intraspinal anaesthetization, or is acquainted with the literature of the subject, would use this drug to-day. Injury and repair occupy Part IV; wound treatment is included, and this section is clearly written and adequately illustrated. The remainder of the first volume is devoted to surgical affections of the tissues and tissue systems. The author's views on the parasitic origins of tumours are temperately stated; a series of illustrations of "parasites" in cancer are given with the statement that their "existence is undeniable." This part of the volume is marred by vagueness in definitions, and there are several instances of statements, more especially those bearing on pathology, which cannot fail to confuse the student. To describe the "tuberculous" as one of the varieties of acute osteomyelitis; to insist on a distinction between osteosarcoma and sarcoma of bone; to classify arthritis into dry, acute, purulent, and chronic, is to make statements not sufficiently precise for a textbook. The second volume treats of

[6] Trauma of the Head as a Cause of Insanity. By Charles W. Burr, *Journ. of the Amer. Med. Assoc.*, January, 1907.

[7] *Uber den Wiederersatz der Funktion bei Erkrankungen des Gehirnes.* By Professor Dr. G. Anton. Berlin: S. Karger; and London: Williams and Norgate. 1906. (Demy 8vo, pp. 32. 1s.)

[8] *Gehirn und Schädel, eine topographisch-anatomische Studie in photographischen Darstellung.* Von Dr. R. Hermann, a. o. Professor der Anatomie an der Universität Erlangen. Jena: Gustav Fischer. 1908. (Sup. roy. 4to, pp. 12; 69 zum Teil Mohrfarligen Lichtdrücktafeln. M. 60.)

[9] *The Principles and Practice of Modern Surgery.* By R. Park. A.M., M.D., LL.D. Vol. i, General Surgery. Vol. ii, Regional Surgery. London: H. Kimpton; and Glasgow: A. Stenhouse. 1908. (Imp. 8vo pp. 1074. 36s.

regional surgery. One meets early with a plate (xlv) which presents the topographical anatomy of the cerebral cortex according to the ideas of five years ago, corrected by the researches of Sherrington and others. In its clinical descriptions, its illustrations, and its synopses of treatment, however, this volume is a reliable guide. The author is conservative, but at the same time in sympathy with advances in surgical practice, and his volume may be consulted by student and practitioner with advantage.

The seventh edition of this *Manual of Surgery*,[10] so widely known by students under the familiar title of "Rose and Carless," needs no criticism. In this, as in previous reissues, careful revision with judicious alteration here and there have maintained the high position of the book as an authoritative treatise on modern surgery. The authors can fairly claim, among many other merits, that of having kept their manual, which has passed through seven editions in the course of ten years, within convenient bounds. In his interesting preface, Mr. CARLESS, after an allusion to his colleague and to the share he has taken in the preparation of this edition, points out that the task of keeping the book at its present high level will be increased rather than lightened in future years. Surgery, he states, is in an eminently plastic condition: new problems are awaiting settlement, new therapeutical methods are being adopted, and novelties of all sorts are being exploited. It seems to be probable that the operating surgeon, while extending the range of his work in some fresh directions, will be ousted in others. Though we are not optimistic as to any immediate results of cancer research, it is gratifying to know that the surgical authorities who are responsible for this work are convinced that in some future edition they will be able to chronicle a more effectual and scientific cure of this disease than the present-day procedure, which they regard as mutilatory. In our renewed praise of this manual full recognition is due to those who have so ably assisted the authors in the work of revision and in additions to the pathological and electrical subjects. We would venture to suggest that it would be well in future to include a list of the illustrations, to which in the present edition some clear and good additions have been made by Dr. Dupuy.

The excellent *Treatise of Operative Surgery*, by Dr. BICKHAM of New Orleans, has, in its third edition,[11] been so much enlarged and rendered so very comprehensive that it is likely, while attracting increased favour from the teacher and the operating surgeon, to be regarded as an inconvenient, if not impossible, guide by the student. In its present form it is undoubtedly a standard and very reliable work of reference, and thoroughly fulfils the author's original intention of describing the best and most approved technique of modern practical surgery. In his heavy task of revising the work Dr. Bickham has, he very gratefully acknowledges, received constant aid and encouragement from his wife. He has also good reason for thanking the lady artist who in this, as in previous editions, has done so much by her original illustrations to make quite clear the teaching of the text.

Dr. BOCKENHEIMER'S surgical atlas[12] is a selection of coloured pictures, 150 in number, illustrating types of disease which come to the surgeon for treatment. The pictures are extremely good, the equal of those in any clinical atlas. Faithfulness to the last detail is necessary in such illustrations if they are to be of any real service, and these fulfil this requirement. Naturally those of new growths occupy the first place in point of number, and they form a remarkable series. There are gaps, of course—it would take many atlases to fill them—but the series is well chosen; the appearances are typical, and extreme examples have been wisely avoided. The accompanying text contains a description of each plate and paragraphs on differential diagnosis and treatment. In many cases also the clinical history of the patient is given, and this adds materially to the value of the plate. Students, surgeons, and teachers of surgery will welcome this atlas; the plates are so true that they merit detailed study, and are admirable for demonstration purposes.

Dr. W. STOECKEL, Director of the Gynaecological Clinic at Marburg, has compiled an atlas of cystoscopy,[13] showing various morbid conditions of the bladder in disease of the female pelvic organs. The plates show both primary bladder lesions and lesions in this viscus secondary to affections originating outside it. Changes in the bladder in pregnancy in cystocele, and in cystitis are shown, and of particular interest in this group are the pictures of fistulae. The illustrations of conditions invading from the outside include carcinoma and parametritis. There are also pictures of ligatures, of a gauze tampon, and of a pair of artery forceps which made their way into the bladder. The plates are excellently reproduced, and form a series of much interest and value.

The new and revised issue of Mr. MANSELL MOULLIN'S essay on *When to Operate in Inflammation of the Appendix*, will,[14] we have no doubt, prove a useful and instructive guide to the proper treatment of the grave affection which is here discussed. In this collection of four clinical lectures will be found a full and definite statement of the necessity of prompt surgical intervention in all but a very few cases of acute appendicitis—a line of treatment, it may be pointed out, which, when advocated by the author in his earlier edition, was not so widely accepted in this country as it is at the present time. In the concluding lecture will be found an excellent review of the clinical phenomena of appendicitis, deductions being drawn from the more important of these with regard to the nature and prognosis of the inflammatory attack and the indications for immediate or for delayed operation.

NOTES ON BOOKS.

THE *Calendar* for 1908-9 of the University Correspondence College[15] will be useful to intending candidates for the Matriculation Examination of the University of London since it contains the papers set at the January examination, together with answers and solutions. Some years ago the Senate resolved, we believe, to appoint moderators to look after the examiners; it would be interesting to know with what degree of diligence these officers exercise their moderating influence.

The Medical Inspection of School Children, a series of lectures delivered at the West London Post-Graduate College, is a reprint of six articles which have appeared in recent issues of *The Medical Officer*. The greater portion of the first two lectures will be found at first hand in the three Memoranda on School Medical Inspection issued by the Board of Education, but in the process of explaining the scope of the Board's suggestions matter of a useful character has been incorporated. The writer, however, has confused the Annual Report to the Local Education Authority with that to the Board of Education. Skin diseases, examination of the eyes, examination of the teeth, and ear, nose and throat affections are dealt with in the subsequent lectures. While there is to be found in each of these lectures much valuable information, there is an absence of appreciation of the facts that the school doctor is not employed at a hospital or dispensary, nor has he the time and opportunity of indulging in the luxury of extreme specialism. The possibility of carrying out many of the suggestions made does not seem to have been seriously considered. In publishing information for the help and guidance of the new school doctor care should always be taken that the material is suitable and, at least,

[10] *A Manual of Surgery for Students and Practitioners.* By William Rose, M.B., B.S.Lond., F.R.C.S., Emeritus Professor of Surgery and Member of Council, King's College, London, and formerly Senior Surgeon to King's College Hospital, etc., and Albert Carless, M.S.Lond., F.R.C.S., Professor of Surgery, King's College, and Surgeon to King's College Hospital, Examiner in Surgery to the University of London and to the Victoria University of Manchester, etc. Seventh edition. London: Baillière, Tindall and Cox. 1908. (Demy 8vo, pp. 1392. 554 illustrations. 21s.)

[11] *A Textbook of Operative Surgery, covering the Surgical Anatomy and Operative Technic involved in the Operations of General Surgery.* Designed for Practitioners and Students. By Warren Stone Bickham, M.D., Phar., Ill. Third edition. Philadelphia and London: W. B. Saunders Company. 1908. (Roy. 8vo. pp. 1206, illustrations 854. 28s.)

[12] *Atlas chirurgischer Krankheitsbilder.* Von. Dr. Ph. Bockenheimer. Berlin: Urban and Schwarzenberg. 1908. (Demy 4to, pp. 466, 150 illustrations in colours. M. 36.)

[13] *Atlas der gynäkologischen Cystoscopie* [Atlas of Gynaecological Cystoscopy]. Von Professor Dr. Stoeckel. Berlin: A. Hirschwald. 1908. (Dbl. pott 4to, pp. 34, 70 illustrations. M. 12.)

[14] *When to Operate in Inflammation of the Appendix* Clinical lectures by C. Mansell Moullin, M.D.Oxon., F.R.C.S., Senior Surgeon to the London Hospital. Third edition. London: John Bale, Sons, and Danielsson, Ltd. 1908. (Demy 8vo, pp. 48. 2s. 6d.)

[15] Cambridge: Burlington House; London: 32, Red Lion Square. Small 8vo, pp. 150. 1s. net.)

likely to be of use to him in the performance of his duties. This is not always the case, and in these lectures many matters are referred to concerning which, however interesting, it is problematical if the school doctor will, under present conditions, have the opportunity of utilizing the information given.

The tenth and last volume of *Green's Encyclopedia and Dictionary of Medicine and Surgery*[16] has just been issued, and the editor may be congratulated on the completion of a task which was perhaps not altogether worthy of his distinguished abilities. Some years ago the same publisher issued an *Encyclopedia Medica* in thirteen volumes, and in the present publication a medical dictionary containing thousands of definitions has been incorporated with the encyclopedia, and a system of cross-references introduced. In addition, the opportunity has been taken to note important advances in medical and surgical practice, sometimes in the form of new articles, sometimes by addition to the older articles, sometimes by short paragraphs or definitions giving cross-references to the original contributions. The editor's expert knowledge of teratology has led to the inclusion of a large number of rarely-used terms connected therewith—a fault, if it be a fault, atoned for by a new and able article in vol. iii on human embryology. In vol. iv Dr. BALLANTYNE also contributes a long article on diagnosis in gynaecology, which, whatever may be said about its appropriateness in a dictionary, is certainly an excellent piece of work. A new article on heart-block, by Dr. J. S. Fowler, is a model of lucidity and conciseness, and the summary of recent views on immunity is satisfactory. We have reason to think that, from the point of view of the lexicographer, the later volumes are better done than the earlier, the editor no doubt gaining experience of this very difficult art during the progress of his task.

The character of the *Practical Hints in General Medicine*[17] offered by Hospital Assistant K. S. AGNIHOTRI, Ph.G., of Panhala, in the Kolhapur State, can best be gathered from a few extracts:

80. Castor oil. In many parts of America castor oil in half-ounce or ounce doses is largely used as a fattening agent in place of cod liver oil.
218. Life to economize. The proper way to economize life is to sleep every moment that is not necessary or desirable that you should be awake.
254. Patent medicines. A doctor should never prescribe a patent medicine of which he does not know the formula exactly.
298. Primapara (*sic*). For two weeks before the expected date of delivery give your primapara half an ounce of castor oil every other night; labor will be a dream.

The "hints," which are arranged alphabetically, have been drawn from a great variety of sources, and constitute a very grotesque collection. It is fair to add that many of them are sound and likely to be useful.

An Epitome of Urine Examination by the same author[18] presents no novelty, but the physical characters of the excretion and various methods of qualitative and quantitative examination of normal and abnormal constituents are systematically and correctly described. The microscopic examination of urinary deposits is very cursorily alluded to, and no mention is made of bacteriological examinations.

The General Dispenser,[19] by the same author, of which a third edition has recently been printed at Kolhapur, has been compiled for the benefit of dispensers or compounders in Indian hospitals and dispensaries, to whom it will undoubtedly be helpful. The book lays down clearly and concisely the duties of this class, gives an outline of pharmacy, dispensing, and prescribing, supplies brief notes of the action and uses of drugs and poisons, and of the treatment of excessive doses of the latter, and appends some information bearing on the duties which the dispenser may be called on to perform in the hospital when assisting the officer in charge in treating the sick and wounded, or when, as often happens, he is left in charge during the temporary absence of the latter. The work is of a practical character throughout, and is well fitted to accomplish its purpose.

[16] *Green's Encyclopedia and Dictionary of Medicine and Surgery.* In 10 volumes. Edited by J. W. Ballantyne, M.D., F.R.C.P.E. Edinburgh and London: W. Green and Sons. (Imp. 8vo. 15s. per vol.)
[17] *Practical Hints in General Medicine.* Series 1. By K. S. Agnihotri, Ph.G., Hospital Assistant, Panhala (Kolhapur State). Kolhapur Mission Press. (Demy 16mo. 12 annas.)
[18] *Epitome of Urine Examinations.* By K. S. Agnihotri, Ph.G., Hospital Assistant, Panhala (Kolhapur). Kolhapur Mission Press. (Demy 16mo, pp. 50. 10 annas.)
[19] *The General Dispenser.* By K. S. Agnihotri, Ph.G., Hospital Assistant, Panhala (Kolhapur State). Kolhapur Mission Press. (Demy 16mo, pp. 266. Rs. 1.4.)

Materia Mnemonics, a small pamphlet sold by William Bryce, bookseller, Edinburgh, at the price of 3d., is commended to the attention of examiners in materia medica as containing illustrations of many questions they ought not to ask.

The second issue of *Nisbet's Medical Directory*,[20] the edition for 1909, has appeared. It consists of two parts. Part I contains an alphabetical list of registered medical practitioners, giving addresses and diplomas and chief appointments held. This list has been improved by the introduction in some cases of additional initials for purposes of identification. Part II consists of a local directory, in which the names are classified under places of residence. The preface states that the present edition contains over 1,000 entries more than last year, but by attention to arrangement and printing the bulk of the book has not been increased.

In the sixth edition of his little work, *A Simple Method of Water Analysis*,[21] in which he describes the method of analysing water by means of "soloid" reagents, Dr. J. C. THRESH gives a short guide to the interpretation of the results obtained. We agree with him that a hard-and-fast line cannot be drawn as to the amount of chlorine which should condemn a water. A very great deal of good would be done if medical officers of health would more systematically examine water supplies for chlorine and record the results. We should then be much better able to obtain a chlorine standard for particular districts. Dr. Thresh still estimates his results in parts per gallon. Has not the time arrived for the universal estimation in parts per 100,000?

[20] *Nisbet's Medical Directory.* London: James Nisbet and Co. (8vo, pp. 786. 7s. 6d.)
[21] *A Simple Method of Water Analysis.* By John C. Thresh, M.D., D.Sc., D.P.H. London: J. and A. Churchill. 1908. (Fcap. 8vo, pp. 62. 2s. 6d.)

MEDICAL AND SURGICAL APPLIANCES.

A High-temperature Gas Flame.

IMPORTANT modifications in the construction of the Bunsen burner have made it possible to secure an almost completely homogeneous non-luminous gas flame, giving a considerably higher temperature than the Bunsen burner, and being also more economical in its consumption of gas. The burner, called after its inventor, the Méker, depends for its efficiency on the success with which the problem of obtaining exactly the right mixture of air has been solved. In the Bunsen burner an excess of gas was always present, and any attempt to increase the air supply beyond a low limit resulted in the formation of an explosive mixture and in the flame firing back. The Méker burner differs from the Bunsen in having a larger number of airholes at the base, in having the mixing chamber shaped like an inverted bottle, or like an injector, and in being furnished at the top with a deep nickel grid. The grid resembles a square-celled honeycomb, and is 10 mm. deep, the area of each cell being 2 mm. square. It prevents back-firing by means of the wide cooling surface it presents to the gas, for it is only with great difficulty that a flame can travel in the direction opposite to the gaseous mixture which gives rise to it, if in this inverse direction it encounters a very large cooling surface. The peculiar shape of the stem secures the perfect admixture of gas and air, and as a result of these modifications the cool inner zone of the Bunsen flame is reduced to a height of 2 mm., and the temperature of the flame is found by the thermo-couple to be practically the same at all points. Its heat is sufficiently intense to melt silver, gold or copper without the use of a blowpipe. If an air-blast is used, the temperature attained is about 1,800° C. Though the value of the burner is obvious, and though it works well in the laboratory, it is not likely that it will displace the Bunsen, for for many laboratory purposes its temperature is inconveniently high, and the absence from it of the three zones of the Bunsen will be missed. For supplementing the Bunsen, however, it will be found invaluable, for it enables many operations which under ordinary circumstances have involved all the trouble of the blowpipe flame to be performed with the greatest ease. It should be added that the flame does not roar. The cost of the ordinary laboratory size is half a guinea; compressed-air burners of a similar size are made in two qualities, and cost 16s. and 28s. 6d. respectively. Specially constructed furnaces for working with the Méker burner are also supplied. The patent rights for this country and the colonies

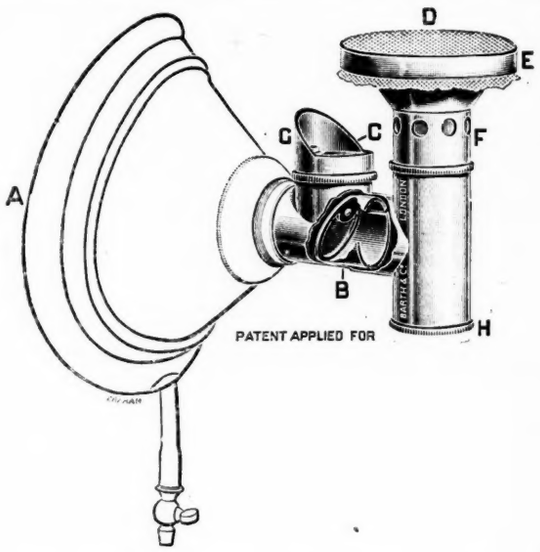
have been acquired by the Cambridge Scientific Instrument Company, which has recently issued a list (No. 55) containing a full illustrated account of furnaces made on this principle.

Irrigation and Rectal Feeding.

We have received from Dr. H. Joseph Cates, Extern Midwifery Assistant, St. Bartholomew's Hospital, a description of an apparatus which he has contrived to facilitate rectal feeding, continuous saline infusion, irrigation, or any other purpose in which a regulated flow of fluid at a constant temperature is required. It consists of a metal hot-water jacket, inside which is a glass cylinder holding about a pint and a half of fluid. The stem of this passes out from the bottom of the hot-water jacket, where it is connected with a stopcock, by which the flow of the fluid can be easily regulated. To the lower extremity of the stopcock is fixed rubber tubing, at the end of which either a catheter or a needle can be attached as required. The advantages claimed for the apparatus are that it retains the heat well, is of simple construction, is easily cleaned, takes up very little room, and can be packed into a small compass. On the jacket is a strong hook on which the appliance can be hung on the bedrail, on the back of a chair, or elsewhere. It has been made for him by Messrs. Meyer and Meltzer, of Great Portland Street.

An Open Inhaler for the Administration of Ether, Chloroform, or Mixture.

Mr. Harvey Hilliard (Anaesthetist, Royal Dental Hospital: Assistant Instructor in Anaesthetics, London Hospital) writes: Three years ago I published[1] the description of a regulating inhaler, designed for the dosimetric administration of either ether or chloroform or of mixtures of these drugs. The chief feature of this apparatus is that the anaesthetic to be administered is placed in a reservoir, and the anaesthetist then arranges the mechanism so that a definite percentage of vapour can be delivered in the inspired air. Finding, however, that many anaesthetists prefer still to use a drop bottle, but are dissatisfied with the character of the masks in common use, particularly when it is desired to administer ether by the open method, I have designed the apparatus here figured, with a view to eliminating the inherent disadvantages of the ordinary masks. With ordinary masks it is almost impossible to attain to anything like regular, unvarying minimal dosage, since it is impossible to tell how much of a given quantity of the anaesthetic the patient inhales, and how much air gains admittance round the mask. The method is necessarily wasteful and inaccurate, and untoward results are only avoided by the skill and judgement of the anaesthetist. There can be little doubt that a certain proportion of the deaths reported from chloroform are due to the sudden variations in the dose of the anaesthetic. Anaesthetists have consequently turned from the increased dangers of chloroform to the safer administration of ether by the open method, and here, even more than in the case of chloroform, difficulties are met with. The induction of anaesthesia by this method is unnecessarily prolonged, and owing to the respiration taking place to and fro through the mask, as much of the anaesthetic is blown into the room as is inhaled by the patient, with consequent discomfort to the operator, anaesthetist, and assistants. In the apparatus shown an ordinary nitrous oxide facepiece, A, is used, and the patient breathes only through valves B and C in such a way that the inspired air passes through gauze, D, on which any desired quantity of the anaesthetic can be dropped. The gases of expiration pass out freely at the aperture, C, being prevented passing again through the gauze by the inspiratory valve, B; thus, less than half the usual quantity of the anaesthetic is required. For an adult it is necessary to use eight to sixteen layers of gauze stretched over the inspiratory opening of the inhaler, by means of the fixing ring, E. For a child less would be required. The gauze carrier, F, is detachable, and is pierced half round its collar by holes; by rotating the gauze carrier the holes are made to pass over a slot in the tube beneath them, and thus extra air can be admitted in a regular manner to mix with and dilute that passing through the gauze. To commence the administration, a drop or two only of the anaesthetic should be sprinkled on the gauze, the carrier being rotated sufficiently to uncover all the holes, so that the weakest possible vapour may be inhaled at first. As the patient becomes accustomed to the anaesthetic, the holes are occluded one by one by rotating the gauze carrier, and when they are completely closed larger quantities of the anaesthetic may be sprinkled on the gauze, as the patient will by that time be insensitive to the strength of the vapour. Provided the facepiece is made to fit accurately, the following advantages ensue: Much less time is occupied in inducing anaesthesia with this apparatus than with any other open mask; dosage becomes more precise, since as the patient inhales the whole of the anaesthetic administered, his condition can be more accurately watched, and the anaesthetist is not subjected to the inhalation of the anaesthetic, which the patient blows from the ordinary mask with each exhalation, and his judgement, in consequence, runs much less risk of becoming dulled after prolonged administration. This point is, moreover, further ensured by the expiratory valve of the inhaler being protected by a little cowl, G, which can be turned in any position to direct the expired air away from the administrator. The detachable cap, H,



has been provided to prevent any possible excess of the anaesthetic fluid running through the apparatus, owing to too little gauze having been used, with the consequent risk of blistering the patient's face. The valves are mounted on removable collars, which can be withdrawn for cleaning. The several portions of the apparatus may be taken apart for this purpose, or for packing inside the facepiece to facilitate carriage. The method of employment for chloroform is self-evident, but for giving ether it is recommended to start with a little $C.E._2$ mixture, as this is more pleasant for the patient and shortens the induction period, and when he has become accustomed to breathing this vapour, then ether alone may be quite comfortably substituted. With this apparatus I have kept patients comfortably anaesthetized under ether for periods lasting two hours, for Wertheim's hysterectomy in the Trendelenburg position, and for the removal of the Gasserian ganglion in the sitting posture. From an experience of several hundred cases in which the apparatus has been used, I believe unpleasant after-effects are much less likely to be met with, owing to the greater precision of dosage its use makes possible. The appliance has been made for me by Messrs. Barth and Co.

[1] *Lancet*, September 27th, 1905.

MEDICINAL AND DIETETIC PREPARATIONS.

Liquid Surgical Soap.

Under the name "Sterilla," a liquid antiseptic soap has recently been put on the market by Mr. H. E. Matthews (The Mall Pharmacy, Clifton, Bristol). It is a pleasantly fragrant liquid, which we find to be free from uncombined alkali, both caustic and carbonated; when used for washing the hands it yields an abundant lather, and shows great efficiency as a detergent, while even repeated use causes no irritation of the skin beyond a slight smarting which only lasts for a few seconds. The maker has submitted for our inspection the certificates of a well-known bacteriologist, which show that for *B. typhosus*, *S. pyogenes aureus*, and *B. diphtheriae* this soap possesses a bactericidal power equal to that of pure carbolic acid. From its nature it cannot cause corrosion of instruments, but will distinctly help to prevent it. It can be obtained in ordinary glass bottles or in a nickel bottle for safe carriage.

ROYAL COMMISSION ON VIVISECTION.

FOURTH REPORT.

(Continued from page 346.)

WE continue our abstracts from the evidence of which the minutes are contained in the fourth report of the Royal Commission on Vivisection, issued in December, 1907.*

Evidence of W. E. Dixon, M.D.

Professor Dixon gave evidence as representative of the Therapeutical Section of the Royal Society of Medicine. Speaking about anaesthetics and narcotics, he said there was no essential difference between an anaesthetic, a narcotic, and a hypnotic. The drugs of the alcohol series which acted on the brain formed a very large group, including alcohol, chloroform, ether, paraldehyde, chloral, urethane, and many more. These drugs all acted in the same way, and their differences were determined entirely by differences in the rate of absorption and excretion. Chloroform and ether were absorbed extraordinarily rapidly. They were taken into the blood almost immediately, and when the administration was stopped they were excreted equally rapidly. On the other hand, chloral, given by the mouth, remained in the blood over a very long period. With animals, he personally preferred in many experiments to use urethane to chloroform. Perhaps chloroform was given first to get the animal under quickly; then the urethane was given either intravenously or subcutaneously, or into the peritoneal cavity, and it got into the blood and produced anaesthesia lasting from six to eight hours. The dose of urethane necessary to anaesthetize a rabbit was 1½ gram per kilo body weight, and for a dog or a cat about 1 gram per kilo body weight. According to that reckoning, the dose to produce anaesthesia in man would be about 70 grams or 2 oz., but it was not employed for that purpose. The drugs of which he had been speaking acted on all the nerve cells in the brain in much the same way, except that in every case they paralysed the sensory nerve cells before the motor, so that there might be complete anaesthesia whilst movement could still be got; on stimulating an afferent nerve movement might be got when the sensory cells were all obliterated from the brain. Morphine acted quite differently; it only attacked the sensory nerve cells, so that if one produced complete anaesthesia from morphine, one could still get very distinct reflexes. It could be administered to man in anaesthetic doses, and quite distinct reflexes could still be obtained, although when the man subsequently recovered he had never felt anything at all. Morphine was very rarely used alone as an anaesthetic, not because it was not one, but because it left the motor cells active and the animal was reflex. The action of morphine on dogs was precisely the same as that on man. It was nearly always used for dogs—not alone, because it was necessary to cut out these movements. It was quite commonly used now for man in Germany, when it was given with some drug which also paralysed the motor cells as well as the sensory, and so in Germany, and to a limited extent in England, it was given with hyoscine (the so-called morphine-scopolamine narcosis) for operations where chloroform was deemed unsuitable. In that combination it both produced complete anaesthesia and prevented reflex movements. Two other minor points he wished to draw attention to were: First, that when surgical anaesthesia was produced the amount of anaesthetic necessary to continue that anaesthesia might be continued indefinitely by the subsequent administration of 0.2 or 0.3 per cent., or even less. The test commonly employed was the reflex test; if there was a corneal reflex one knew that the motor cells were beginning to recover their activity. The second point was the great value of giving morphine before administering chloroform. This combination produced a very perfect anaesthesia, the quantity of chloroform necessary being much smaller than would be required if no morphine had been given. Coming to curare, he said that it was not an isolated drug; there were lots of other drugs having the same type of action. All that group paralysed the nerve cells, the brain, and every one of them paralysed the motor nerve endings, and they might all cause convulsions by acting on the spinal cord. Some members of the group had one action well defined and others another. Curare first paralysed the motor nerve endings and later the nerve cells, whilst hemlock paralysed the nerve cells and nerve endings, roughly, about the same time. Curare given alone was a complete anaesthetic if enough was given, although those conducting experiments in England assumed that curare had no action on the nerve cells, and always gave enough of some other anaesthetic to paralyse the brain completely. Claude Bernard's experiments only applied to the spinal cord; all that he showed was that the sensory cells in the spinal cord were not paralysed by curare. Nevertheless, they believed that small doses of curare would paralyse the motor nerve endings before the brain cells were paralysed, but that large doses of curare would paralyse the whole of the brain like chloroform. That meant that the animal would absolutely cease to feel pain with a large dose of curare. With a small dose it might, he thought, continue to feel pain though unable to express it by action. In reply to further questions, he said that when operating on animals he usually had a box into which he put the animal, and poured in chloroform in the case of cats and ether in the case of rabbits; to dogs he gave the chloroform by hand very slowly. Dogs very easily died of chloroform, but if one went sufficiently slowly they never died. He never killed a dog by any chance whilst administering anaesthetics to them now. Usually there were no renewal doses. The animal was placed on the table, and he gave it the urethane or chloral (usually, almost always, urethane), and then the animal was anaesthetized for very much longer than was required. He gave the urethane by injecting it into the blood. Chloral he did not use much, but he generally gave it into the peritoneal cavity. Chloral, like chloroform, depressed the heart. It produced exactly the same anaesthetic effect as urethane. There was one other point about curare which he thought extremely important, and that was that it was excreted with extraordinary rapidity; so that if one gave an animal curare it remained curarized only for a very short time. So quickly was it excreted that one could not poison a man by the mouth, because as fast as the drug got from his stomach into his blood it went out by the kidneys. He himself had taken a large dose of curare, and had never had any symptoms at all; yet if he had had a cut on his skin and let the curare get in, the curare would, he had no doubt, have paralysed or depressed his motor nerve endings. The importance of that was that if one gave an animal an anaesthetic plus curare, the curare disappeared very quickly, the anaesthesia still existing. Supposing that he injected curare into a vein, the animal remained curarized, say, for half an hour to three-quarters of an hour. If that animal had got urethane plus curare, the curare action was over in half an hour or three-quarters of an hour, while the anaesthetic action of the urethane continued for eight hours at the least. The blood pressure was just as delicate an indication of the action of chloroform as the reflexes. During the whole of his operations the blood pressure was always taken by a cannula connected with an artery to a mercurial manometer. The animal was given an anaesthetic to begin with, and it never recovered from it. He used curare very rarely. Asked what was the state of things produced by curare, which made him able to perform an operation when the animal had curare and not able to do it when it had not, the witness said, Supposing he wished to stimulate a nerve, he excited the nerve in one way or another, and he would get, if the muscles were intact, simply contraction of muscles; but if he had eliminated the muscle effect he had only got the vascular effect left. During the three or four, or perhaps five, times he had used curare he had always been absolutely satisfied that the animal had not felt pain. Speaking as to the difficulty of obtaining evidence from clinical experiments, he said he was on a committee of the British Medical Association for suggesting what drugs should go in the new *British Pharmacopoeia*, when it became necessary to find out the value of certain new silver compounds. They sent out about 300 notices to the leading ophthalmic surgeons, and

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surgeons attached to lock hospitals, asking them what was the value of these new compounds, and the results which came in were most remarkable. It would be thought that in dealing with the action of silver compounds used for eye work, conjunctivitis, and various forms of inflammation of the eye, that if it was possible to make any definite statement from clinical observations it would be about a disease which one could actually see; yet the decisions of these expert physicians and surgeons as to the value of these new drugs were exactly divided. Some of them said, "This drug is our sheet anchor in the treatment of disease." Others regarded the same drug as quite inert and worthless. The explanation was simple. It meant that the conditions in a clinical experiment were never the same; there was no control experiment. No two men were exactly the same in every respect, except that one was being treated for a particular disease. The compounds mentioned had not been tested by animal experiment. In an experiment on an animal one had exact conditions and control. He had made experiments on perhaps eighteen to twenty dogs during the past year. There was never any difficulty in keeping a dog under an anaesthetic provided it was given slowly at first. The danger was that if one gave a dog 6 per cent of chloroform vapour it died in a minute or half a minute. If one gave it 0.1, then went to 0.2, then to 0.3, and so on, it never died. These experiments lasted perhaps two or three hours, and the animal was always killed before it recovered. He killed it generally by injecting air into a vein. He had a vein always prepared. He blew in a little air which went straight to the heart, got behind its valves, and the heart stopped beating. Proceeding, he said he gave a series of demonstrations regularly to classes. He had never seen any levity on the part of students. It was the most important part of their curriculum without any exception. Asked if there was any way by which many drugs could be standardized, except by watching their effects upon animals, he said there were five drugs—digitalis, strophanthus, squills, ergot, and cannabis indica—the chemistry of which was so little known that they could not standardize them otherwise than physiologically. The witness handed in a list of ten different ergots bought at different chemists' shops. A practitioner having to treat a woman in labour gave one of those ergots, and probably in three cases out of four it was inactive. The same applied to digitalis. This difficulty was got rid of by having the drugs—each brew—standardized. Certain wholesale chemists standardized each lot they sold. The only way by which their action could be ascertained was by experimentation on animals. The absence of accurate knowledge of the strength of drugs had led to most diverse opinions being expressed by medical practitioners as to the value of certain drugs. Cannabis indica was more usually non-active than active as bought in shops. For those drugs he had mentioned chemistry was at present quite worthless. Through their not being able to isolate the alkaloids with ease, it was very difficult to tell what was the strength of any given specimen. Asked if the composition of curare was ascertained with any certainty, he said curarine had been prepared in Germany, but one could not buy it. He did not think anything was known about its chemical composition. The tests of anaesthesia in animals that were chiefly used were the reflexes and blood pressure. As far as he knew, no attempt had been made to utilize the blood-pressure gauge for the purpose of determining the amount of anaesthesia in human beings. In the case of morphine, the test of the presence or absence of the lower reflexes was inapplicable. By a reflex action he meant an unconscious action. Most of our reflexes were unconscious. It was part of the essence of being reflex that it was an involuntary act. A reflex action might sometimes be controlled by consciousness; but consciousness was not necessarily present to a reflex action. He had taken curare himself by the mouth in a big enough dose certainly to completely curarize a dog. It had no effect of any kind at all. What he took was a very active specimen. Asked if the restriction under the Act with regard to curare should apply to the other drugs that resembled it, the witness replied that most of the other drugs paralysed the brain before they paralysed the motor nerve endings. As an example he mentioned nicotine, which paralysed the brain first. In the case of curare it happened to be the other way round; it went for the nerve endings first, and then to the brain. That was why there was all this fuss about curare. Asked whether it was not a fact that different observers watching the same experiments on animals had drawn different conclusions, he said they did not differ on the facts. The facts remained the same. They only drew different conclusions as to how the effect was produced. There was no reason at all for supposing that a dog was less sensitive to the action of morphine than other animals of the same size and weight. He would say it was more sensitive. He had had large experience of giving morphine to dogs. In reply to further questions, he said there were no drugs with which they were acquainted which had any different action on the heart or on the kidneys of animals from that in man. The only differences which occurred were in the brain. For instance, cocaine in big doses caused convulsions. Cocaine acted on the cerebral hemisphere. In the frog there were practically no cerebral hemispheres. One could give an enormous dose of cocaine and get hardly any twitchings. In the rabbit a relatively smaller dose, but still a very big dose, was wanted. In the dog, in which the cerebral hemispheres were better developed, a still smaller dose, in a monkey still smaller, and in man the smallest, was wanted. One could tell the dose of cocaine necessary to produce convulsions by weighing the cerebral hemispheres and then the body; the dose of cocaine varied in relation of these two exactly. Chemical poisons did not multiply in the blood. There was some relationship between chemical constitution and physiological action, but a small change sometimes produced a tremendous difference in action. In his opinion, urethane was the best anaesthetic for animals. Asked if it was essential to keep the provision in the Act that curare must only be administered with another anaesthetic, he said he thought that a good provision. He agreed that otherwise there would be a period of time during which there would be sensation without motion. When he took curare it was done accidentally. He did not know what was going to happen, but nothing happened at all. In Germany they had got pure crystals of curarine, but the supply of curare had given out. They were still dependent on the natives, who kept the sources of curare a secret. He regarded the statement about experiments on animals before students having a deteriorating effect on their character and humanity as absolutely ludicrous. They were every day doing more and more operations under local anaesthesia. Now they injected the local anaesthetics in quite a number of cases into the spinal theca, where it paralysed first the sensory cells, and the man lost all sensation to pain. Touch went next. Pain went first, then tactile sensation, and lastly motion. That was the sequence that always occurred. Consciousness was retained all the time. A number of experiments on the anaesthetic point were done on the investigators themselves. A man had his arm bared, and one drug was injected there, and another drug given here, and one could test it in that way. Where the animals came in mostly was as to the toxicity of these things. Anaesthesia was one property, toxicity another, irritability another. The toxicity and irritability were tested on animals. With some local anaesthetics there were considerable dangers. With cocaine one might in certain people accidentally inject the cocaine into a vein, in which case it produced a toxic action on the brain and on the heart. Secondly, one might get sufficient irritation at the seat of injection to produce objectionable symptoms. As the result of this work they had certainly determined the best local anaesthetic, and were going to recommend that it should be put in the *Pharmacopoeia*. Asked what animals were generally used for standardizing drugs, he said in the case of digitalis, strophanthus, and squills they used frogs; in the case of ergot they used cats—that was under licence alone, and the animals were anaesthetized the whole time; and with cannabis indica they used dogs. The drug was injected, the dog became intoxicated, it recovered completely, and was none the worse. In the standardization of drugs either the animal was under anaesthetics, or there was no suffering at all. Asked what modifications he would suggest in the Act, he said he would give a comprehensive licence to responsible persons, heads of laboratories; and to workers, to people who were not so responsible or who were not heads of laboratories, and so on, he would give an endorsed licence, only allowing them to do certain experiments, and only doing those

experiments under the control or supervision of someone who had had more experience in research than they had. He would abolish the certificates altogether. He would require, were such licence to be given, that a report of the whole experiment should be sent to the Home Office at the completion of the experiment. He would encourage an increase in the number of advanced students doing research work for the M.D. degree. He had never seen a painful experiment on an animal. Asked if he thought it would be well to allow the use of animals under a lethal dose of anaesthetic to enable students who were perhaps qualified medical men to gain manual dexterity in the performance of operations on human creatures, he said he thought that would be a wise provision to make for the sake of humanity. Asked if in his opinion it would be satisfactory if there were to be a freer permission of entry to witness these experiments by independent, properly-accredited witnesses in order to reassure the public, he said if the people were responsible people—that was to say, if they had had a medical education—he would not object at all. Asked if in reporting to the Home Office he would be prepared to certify that, to the best of his belief and endeavour, all the experiments which he had been carrying out had been done painlessly, he said, Yes. Asked if he would be prepared to append a certificate to that effect, he said he always did append a certificate to that effect. He thought in two or three cases he put down that they had experienced "slight pain" or something of that kind. After a subcutaneous injection of some drug an animal felt ill after it, and one had to say that it felt pain. With regard to the standardization of drugs such as digitalis, ergot, and strophanthus, he said that if a time came when they understood sufficiently of the chemistry to estimate the active bodies chemically, then the need for animal experiment would disappear. Asked if he thought that if the Act were repealed now that there would be danger of animals being unnecessarily employed for purposes of vivisection, he said he thought the medical profession would be strongly against the Act being repealed now, because any irresponsible person could make all kinds of experiments if he wished to do so at his private house. He did not agree that the Act had operated altogether antagonistically to the advance of physiology. Asked if he thought that the Home Office was likely to get assistance from the Association for the Advancement of Medicine by Research, he said, Certainly, because that body practically consisted of the highest scientific opinions in the country. Asked if he thought that the present inspection and machinery under the Act gave any real security to the public, he said, Certainly. No case of irregularity had been detected in his laboratory. Asked if he thought they might reasonably trust to the responsible vivisectors under the Act without inspection, he said, Certainly; but at the same time there was no objection to any number of inspectors. Practically, whenever one did an experiment there were a great number of unofficial inspectors. It would make absolutely no difference to any conscientious man whether there was inspection or not. He had heard of no ill-conducted laboratory in this country.

(To be continued.)

THE BORDET-GENGOU REACTION.

SPECIFIC tests of one kind or another designed to render diagnosis more exact are multiplying apace, and it is important that the underlying principles should be grasped and we therefore propose to endeavour to give some account of the principle upon which the reaction observed by Bordet and Gengou[1] a few years ago rests, because it is probable that its more extended application will prove to be of great importance.

In discussing the matter it must be assumed that the reader is conversant with the nomenclature adopted by Ehrlich in his exposition of the "side-chain" theory, or with that adopted by the French school when dealing with the various problems connected with immunity. Should the reader, however, feel the necessity to brush up his acquaintance with the complicated terminology connected with this subject, he could not do better than turn to the small compact monograph by Schatiloff reviewed elsewhere in this issue.

No doubt, on first reading a description of the reaction described by Bordet and Gengou, it will be felt that it is most complicated, but when once its details are mastered and the various effects appreciated, it will be brought home to the reader that at last a very real gain to clinical medicine has been effected by the modern study of the reaction of the serum of the blood to foreign substances when they gain access to the blood stream.

The generic term "antigen" has been coined to indicate all these substances, bacterial bodies, animal cells, and substances such as the serums of animals and snake venom, or vegetable substances such as ricin and abrin, which though incapable of ultimate chemical analysis, seeing that their composition is profoundly changed during that proceeding, produce changes in an animal which can be demonstrated either *in vitro* or *in vivo* or in both. Ehrlich has classified the various substances formed in an animal injected with these substances—the antibodies—into three groups, according to whether they constitute (1) antitoxins, (2) precipitins and agglutinins, or (3) lysins. A lysin is a combination of complement—a substance which occurs naturally in the healthy or undisturbed animal body—and of amboceptor which, as its name implies, is a receptor having powers of combination, on the one hand with complement (complementophile affinity) and on the other with the particular kind of animal cell (cytophile affinity) which when injected into another animal gives rise to the appearance in the serum of this particular amboceptor. The particular amboceptors which are operative in the Bordet-Gengou reaction are two in number, and the reaction turns upon the fact that the complement is capable of becoming anchored to the amboceptor produced either by bacteria or by animal cells. The subject appears to become very complicated when it is added that five substances are necessary for the reaction, but they can be arranged in two groups, and it is proposed to refer only to the observations on the typhoid bacillus, although Bordet and Gengou experimented with different bacteria. An animal susceptible to its action is injected with a culture of the typhoid bacillus (the antigen). It reacts by developing as one amongst other antibodies a bacteriolysin, that is to say, the complement naturally occurring combines with an amboceptor produced by the liberation from certain cells of the inoculated animal of receptors possessing the special character of having two affinities, one for the complement and one for the bacteria which gave rise to their liberation, in this case the typhoid bacillus. The inoculated animal is bled, and its serum is obtained after whipping the blood, by centrifugalization. The serum is then heated for half an hour at 57°C., that is, is "inactivated," or deprived of its complement. The complement being destroyed, free amboceptors are present in the serum, a measured quantity of which is mixed with some of the original antigen used—an emulsion of typhoid organisms, and a measured quantity of the serum of a normal guinea-pig added. The three constituents are then heated for about an hour in an incubator at 37°C. What takes place now is this: the amboceptor already mentioned is enabled to link itself by its cytophile affinity with the bacteria, and by its complementophile affinity with the complement contained in such abundance in the serum of a normal guinea-pig. To use a phrase so commonly associated with this reaction, the complement is "anchored to the amboceptor," and is no longer free to combine with any other amboceptor.

The ingenuity of the Bordet-Gengou reaction consists in this: that to this complement another amboceptor is offered, and the inability of the complement to become thus anchored to another amboceptor is taken as an indication of the affinity of the first-named amboceptor for the typhoid organism. If the inactive serum of a normal animal not immunized against the typhoid bacillus be placed in contact with typhoid bacilli and guinea-pig complement, no anchoring of the latter body will take place, and it will be free to enter into any other alliance of a suitable character presented to it. The remaining two elements of the five above mentioned constitute the alternative alliance. If a rabbit be immunized by injecting it, say, with the washed red corpuscles of a sheep, a haemolytic serum is produced—that is to say, in the rabbit's serum an amboceptor is developed which by combining

[1] *Annals de l'Institut Pasteur*, 1901, vol xv, p. 289.

with the rabbit's complement on the one hand and with washed sheep's corpuscles (the second element of this group) on the other produces such an effect that the latter are laked, the haemoglobin being transfused into the normal saline solution, with which a suspension of the sheep's corpuscles is made. Before, however, exposing the rabbit's serum to the suspension of sheep's corpuscles it is heated to 57° C.; in this way the rabbit's complement is destroyed and haemolytic amboceptors left free which, though capable of combining with sheep's corpuscles, do not in such combination lake the latter, because no complement is available. To review the reaction we may now set out the five constituents in the following way:

First Group:

1. Typhoid organisms = Antigen$_1$ = An$_1$.
2. Amboceptors formed as a result of injecting the *Bacillus typhosus* into an animal, subsequently heating the serum to destroy complement = A$_1$.
3. Complement of a normal guinea-pig = C.

If these three constituents are brought together at a suitable temperature (37° C.) for one hour, they combine together in a very stable union.

$$(An_1 + A_1 + C).$$

Second Group:

4. Amboceptor obtained as above in a haemolytic serum = A$_2$.
5. Sheep's red corpuscles = Antigen$_2$ = An$_2$.

These two at suitable temperature combine thus:

$$(An_2 + A_2).$$

If all five constituents are now placed in an incubator at 37° C. for about two hours and are subsequently allowed to stand in the cold, two combinations exist thus:

$$(An_1 + A_1 + C) \text{ and } (An_2 + A_2).$$

The preparation will show sheep's corpuscles unlaked, and the mixture, though bright red, will be quite *opaque*. The complement C has been anchored so effectively to An$_1$ + A$_1$ that it is not capable of entering into the combination An$_2$ + A$_2$.

If the serum of an animal injected or infected with an organism quite different from the typhoid organism be prepared and substituted for A$_1$, and called A$_3$, the combination An$_1$ + A$_3$ + C can now *not* take place, because the cytophile affinity of A$_3$ does not fit the antigen An$_1$, and the complement C is free or unanchored. If now to these three constituents be added the above second group, An$_2$ + A$_2$, and the mixture be exposed to 37° C. for a couple of hours, and then in the cold for several hours, the following arrangement will occur:

$$(An_1 + A_3) \text{ and } (C + An_2 + A_2)$$

but C+An$_2$+A$_2$ constitutes what is known as a haemolytic system, and haemolysis will take place, the mixture of five substances now appearing as a *clear* red solution.

We shall not attempt to give here the many details as to the preparation of a haemolytic serum of proper strength, and as to the various dilutions of the various ingredients of the reaction, but it is hoped the principle has been made clear. This reaction has been made use of for clinical purposes by Wassermann and Bruck in conjunction with Neisser. If in the above Group 1 there be substituted for the antigen An$_1$ an emulsion of a fetal syphilitic liver (containing Schaudinn's spirochaete of syphilis) and if the serum of an animal infected by typhoid or other organism be replaced by the inactivated serum of a patient known to be syphilitic, *no* haemolysis will occur on subsequently adding the members of Group 2, whereas if the suspect serum belongs to a patient not the subject of syphilis, haemolysis *will* occur on adding Group 2. This is now known as the Wassermann reaction or sero-diagnosis of syphilis. It has been turned to excellent account, for it has given corroborative evidence that the so-called para-syphilitic conditions—tabes and general paralysis—*are* of syphilitic origin, and that these maladies are expressions not of an effete infection but of a present active one.

The Bordet-Gengou reaction has already been turned to good account also in the diagnosis of infection in which the causative antigen, though certainly existent, has so far eluded detection; nor is the scope of this reaction limited to the detection of infective micro-organisms, but should be applicable to the detection of poisoning by other organic agents which are possibly responsible for much of the obscurities of clinical medicine.

A word of warning is necessary as to the limitations of this reaction, for it has been shown that a similar reaction to that described by Wassermann can be obtained when the antigen (A$_1$) is not a syphilitic but a normal one; the reaction is, however, much weaker, so that the test becomes, as does the agglutination test in typhoid fever, specific truly, but only quantitatively, not qualitatively. It has further been discovered that lipoid substances such as lecithin can produce the reaction; so also can sodium oleate. Despite these discoveries, the test may be accepted as reliable on the ground that, though the reaction is not due to the presence of the spirochaete alone as an antigen, it is due to the presence of a body occurring in fetal tissues which are the seat of syphilitic infection. The serum of normal individuals never gives the reaction, and 80 per cent. of syphilitic cases yield a serum which does.

We would call particular attention to the probable value in the future of the careful experimental study of the test devised by Bordet and Gengou, which, though demanding extreme care in all the manipulations, yield results readily appreciable by the naked eye. We have endeavoured to explain the principle upon which the reaction depends, and we believe that it is eminently desirable that it should be applied to other diseased conditions than those mentioned; it appears to open a new road along which many advances may be made.

COMPLIMENTARY DINNER TO DR. HERBERT JONES.

DR. HERBERT JONES was entertained at dinner at the Mitre Hotel, Hereford, on February 4th, by members of the British Medical Association and of the Society of Medical Officers of Health. Dr. EDGAR MORRIS, President of the Worcestershire and Herefordshire Branch of the British Medical Association, was in the chair, and, after the health of the King had been duly honoured, proposed the health of Dr. Herbert Jones. The dinner, he said, was held that the members might show their appreciation and esteem for Dr. Jones and to give him an assurance that he had their united sympathy. Those who knew him would understand the worry he must have experienced during the time there was a difference of opinion between himself and the county council. His medical brethren had cordially upheld him in the position which he had taken up in reference to the public health appointment. In what he had done he had acted for the good of the country at large. His brethren in the county appreciated him as a medical officer of health, knew him to be a good man, honourable and straightforward, strenuous in his work, and enjoying the full confidence of his profession, who only regretted that he was not the county medical officer of health. The President then handed to Dr. Herbert Jones a loving-cup bearing the following inscription:

Presented to
HERBERT JONES, ESQ., D.P.H.CAMB.,
by Members of the British Medical Association and
the Society of Medical Officers of Health,
as an expression of their personal esteem, and in
recognition of his self-sacrificing services in the
interests of Public Health, February 4th, 1909.
Hereford.

The toast was drunk with musical honours.

Dr. HERBERT JONES, in responding to the toast, thanked the President for the eloquent terms in which he had proposed his health. Most of those present had at some time or other known a convalescent patient to say that it was almost worth while being ill to get well again. He had experienced something of that sensation that evening. He desired to say nothing of his misunderstanding with the county council. It was impossible always to escape difference of opinion. He was intensely gratified that he had been asked to be their guest that evening and for the token of goodwill they had placed in his keeping. That gratification was intensified when he remembered that they intended this honour not only towards himself personally, but towards the whole public health service. On giving up general practice and starting in the public health service he had determined that his new association should in no wise divorce him from the old. However highly he might prize the exquisite example of the silversmith's art, it seemed to him that they had given him that which was far more

a prize and far more to be desired, and that was the personal support extended to him in the time of his doubts and difficulties; their action had done something that might have a more far-reaching effect in days or years to come, for their support of him would be a source of inspiration and encouragement to others. He was sure that they would feel, as he did at that time, that there was no more precious feeling a man might have than the ability to say with confidence and assurance, "I have friends who are tried and trusted and true."

The PRESIDENT then announced that letters of regret at their inability to be present and their personal esteem for Dr. Herbert Jones for the services rendered to the profession and to public heath, had been received from the following: Sir Shirley Murphy, Dr. Holbeche (Malvern), Dr. Reid (Stafford), Dr. Symons (Bath), Dr. Manley (West Bromwich), Dr. D. S. Davies (Bristol), Dr. Davies (Swansea), Dr. Bond (Gloucester), Dr. Robertson (Birmingham), and many others.

Dr. SNELL (Coventry), in proposing the toast of "The British Medical Association," said that the privilege fell to him owing to the absence of Dr. Robertson of Birmingham, who, he regretted to say, was ill. On behalf of his own Branch and of the South-Western Branch of the Society of Medical Officers of Health, he desired to say that they were intensely gratified at being able to take part in the presentation to Dr. Herbert Jones. It was a great advantage that through the British Medical Association the services of preventive medicine and curative medicine worked hand in hand, not only for themselves, but for the public weal.

Dr. J. A. MACDONALD (Chairman of Representative Meetings of the British Medical Association), who responded, said that he was grateful for the invitation that had enabled him to do honour to his friend, Dr. Herbert Jones. The British Medical Association had the interests of its members and the public always at heart; there was no association organized like it, and its influence for good extended throughout the British Empire. He would ask them all to unite loyally in the great work of the Association, even if it meant some personal sacrifice.

Mr. LYNN THOMAS, C.B., said that he had hastened his return from Paris to join their gathering, for he felt that the occasion was unique. It gave him great pleasure to propose the toast of the Society of Medical Officers of Health, having among its number a member with such sterling qualities as "the man of the evening." It was difficult to make the public understand the point of view of medical officers of health. They always tried to carry out what was best for the public, but it took the public a long time to find that out, and it was only by having men of the stamp of Dr. Herbert Jones that they could hope to attain their ends.

Dr. J. C. MCVAIL, Ex-President of the Society of Medical Officers of Health, in responding, said that it had two aims in view: (1) The protection of its members, and (2) scientific investigation of disease. Those who were carrying out these aims were often misunderstood by many who were in power and authority. He was particularly glad to be there that evening on account of its being a joint meeting to do honour to Dr. Herbert Jones, whom he had known for some years. Dr. Herbert Jones was thoroughly business-like, and did not fear to bring before the Council anything for the benefit of the public health. He thought the authorities Dr. Herbert Jones was serving should rejoice in the fact that the County Council had not deprived them of the benefit of his services. The medical officer of health and the private practitioner should co-operate cordially, and there was no better guarantee for this than that the medical officer of health should previously have been a general practitioner. Preventive medicine and curative medicine worked together for the preservation and advancement of the race, and the State should not be slow in recognizing the fact, and adequately remunerating those who work in its interests.

THE late Sir Arthur Vernon Macan, of Dublin, the distinguished obstetrician, left personal estate in the United Kingdom valued at £25,924. He bequeathed his midwifery instruments and objects for the teaching of midwifery to Trinity College, Dublin, and his French and German medical books and his English books on midwifery to the Royal College of Physicians, Ireland.

THE STATE REGISTRATION OF NURSES

THE HISTORY, PROGRESS, AND PRESENT POSITION OF THE MOVEMENT.

EARLY HISTORY.

THE question of establishing an official register of nurses, recently the subject of correspondence in this JOURNAL, has a long history.

There is a common impression that nursing as a distinct occupation for lay women practically came into existence with the creation of the Kaiserwirth Deaconesses Institution in Germany and the noble work of Miss Nightingale in this country, but this is not quite true. Doubtless, in private life, the sick depended in earlier times mainly on the care of their personal friends, with such miscellaneous assistance as could be secured; but, so far as ward work is concerned, the extracts from the account of St. Bartholomew's Hospital published in the JOURNAL last year, show clearly that not only must lay women have taken to nursing as a regular occupation, but that in many respects the question of hospital nursing as it then was had been well thought out, and that in broad outline the rules laid down were in keeping with those of the present time.

Those thus engaged were no doubt of a class inferior to that which for the most part fills the nursing ranks to-day, and of course, too, from a modern standpoint they must have been very ignorant. As regards those moral qualities which help to make a good nurse, it is difficult to believe that either in the early Victorian age or at any other period were nurses of the gruesome type familiar to readers of *Martin Chuzzlewit* the rule rather than the exception. There must, in short, have been excellent if ignorant nurses long before Miss Nightingale came on the scene.

In any case it is certain that in the year 1634—that is to say, early in the reign of Charles I—there was a sufficient number of women working as nurses in London for a movement much of the kind now in progress to be going on, and this, as now, was presumably instigated partly from a desire to improve the position of nurses, partly in the interest of the public. It was headed by an eminent physician of the time, Dr. Peter Chamberlen, and had it been successful would have resulted in all nurses being placed under the aegis and control of the Royal College of Physicians. It was not successful, but that it took place at all shows that the idea of regulating the education of nurses, of giving them a definite official status, and of submitting them to control—in short, of nurses' registration—is really quite ancient, though to most of us it seems so modern.

In its present form the movement began almost as soon as systematic training of nurses had become at all general. Agitated quietly in the early Eighties, it practically first reached the surface through the action of the Hospitals Association. At a meeting of this body in October, 1887, the late Sir Andrew Clark brought the subject forward, stating that one of the purposes of the association was to obtain registration of nurses; their work, he said, formed an important part of hospital administration, and their registration was necessary for the security of those engaged in nursing who were competent, of good character, and of proved loyalty in the performance of their duties.[1] These attributes, he added, were not always to be found among nurses who offered themselves for employment, and the ability of a nurse to perform her duties could only be established by examination and certification.

This meeting was entirely favourable to the idea and resolved to give effect to it. The only immediate result, however, was the prompt formation of another body which, though equally favourable to the idea of registration, did not approve of the constitution of the Hospitals Association and its methods. This body was christened the British Nurses' Association, which originated two months after the date of the meeting of the Hospitals Association in question, and was at once joined by the matrons of a large number of the more important hospitals in London and the provinces.

For a time these two bodies, though in a way antagonistic to one another, seem to have been practically identical in their aims. The more active of the two was

[1] BRITISH MEDICAL JOURNAL, 1887, vol. ii, p. 851.

the British Nurses' Association, and in a few months it seems to have had at its back most of the leading medical men in London. The result was that early in 1888[2] a meeting of medical men was held in St. George's Hall, at which the late Sir William Savory, then President of the Royal College of Surgeons, was in the chair, being supported by Sir Henry Acland, Dr. (afterwards Sir Richard) Quain, Lord (then Sir Joseph) Lister, Sir Dyce Duckworth, Sir Douglas Powell, Sir Joseph Fayrer, and other prominent medical men. The subject was debated at considerable length, and the meeting ended in unanimous adoption of the following resolution:

> This meeting desires to express its cordial sympathy with the British Nurses' Association, and pledges itself to support that Association by every means in its power, and urges all nurses in the United Kingdom who are eligible for membership to join the Association for the sake of promoting the advancement of that profession.

In the course of the same year, however, there seems to have been a change of view on the part of the Hospitals Association, and by the beginning of 1889 a counter current had set in. The result was that a manifesto against nurses' registration was published,[3] bearing the signatures of persons connected with a large proportion of the London hospitals.

This manifesto, which was met by a Mansion House meeting in favour of nurses' registration, does not seem to have proved very effective, however, for at its autumn session in the same year the General Medical Council considered the question at issue and passed the following resolution:

> In the opinion of the Council it would be much to the advantage of the public, and particularly would it be of much convenience to the practitioners, that facilities useable under proper guarantees in all parts of the United Kingdom should be given by Act of Parliament or otherwise for the authoritative certification of competent trained nurses, who when certified should be subject to common rules of discipline.

The next event to be noted was the granting to the British Nurses' Association of a Royal Charter, its importance lying in the fact that the approved preamble contained a statement to the effect that the maintenance of a list of nurses showing what training they had received and when and where in each case it had been obtained was of importance to the public.

Next came the foundation of the Matrons' Council of Great Britain and Ireland in 1894, the second of its stated objects being "to bring about a uniform system of education, examination, certification, and state registration for nurses in British hospitals."

PROGRESS.

Up to this time the British Medical Association had not expressed any view favourable or unfavourable to the movement. In 1895, however, when the annual meeting was held in London, the question was brought forward and the following resolution unanimously adopted:

> In the opinion of this meeting it is expedient that an Act of Parliament should as soon as possible be passed for the registration of medical, surgical and obstetric nurses, and the Council of the Association are therefore requested to consider the matter and to take such measures as may seem to them advisable to obtain such legislation.

In due course this resolution was referred to the Parliamentary Bills Committee, the body at that time filling for the Association the functions now exercised by the Medico-Political and some other committees. The question having been duly discussed this committee decided to arrange for a conference between itself and various institutions likely to be interested in the matter. This took place early in 1896[4] and resulted in the proposal from the chair of the following resolution:

> A legal system for the registration of nurses is inexpedient in principle, injurious to the best interests of nurses, and of doubtful public benefit.

In voting on this motion it was asked that only those representative of nursing institutions should take part, and it was adopted by 6 votes to 5. Curiously enough, the decisive vote, that which turned the scale against registration on this occasion, came from the honorary secretary of the body especially founded to secure registration—namely, the Royal British Nurses' Association. It should be added that, from the record of the procedings, it would appear that many of those present felt that prosecution of a scheme for general registration of all nurses might interfere with another movement then in the course of active development—namely, that which some five years later resulted in the passage of the Midwives Act.

After this set-back, there was a kind of pause in the movement so far as its public discussion by representative bodies was concerned, but it continued to progress on the American continent and other countries, and in England renewed activity was heralded by the foundation of the Society for the State Registration of Trained Nurses. The object of this society was, of course, as its name connotes, "to obtain an Act of Parliament providing for the legal registration of trained nurses."

So far as actual attempts at legislation go, the subject, however, did not reach the surface until 1904, in which year two bills were introduced into the House of Commons. One of these was promoted on behalf of the society just mentioned, and the other—providing for the registration both of nurses and of nursing homes—by the Royal British Nurses' Association.

A manifesto against these bills was promptly prepared and was as promptly answered by the other side, copies of both documents being published in this JOURNAL.[5] The net outcome of the matter was that the House of Commons decided to appoint a Select Committee to consider the issues involved. This committee held seven meetings, and the session being then at an end asked to be reappointed. Meantime it published a Blue Book containing minutes of the evidence received.

In the same year the question was considered at a meeting of the Royal College of Surgeons in Ireland, and ended in the adoption, with two dissentients, of the following resolution:

> It is essential that nurses throughout the United Kingdom should be sufficiently educated for the performance of the responsible duties entrusted to them. That a minimum standard of education, and under rules of discipline, could be secured only by an Act of Parliament. That as a preliminary to such legislation it is desirable that a Select Committee of the House of Commons should be appointed at an early date to inquire into the whole nursing system.

In this same year the Medico-Political Committee of the British Medical Association, which was now in full work, likewise considered the subject and prepared a memorandum,[6] drawing attention to the principal provisions of the two bills. It considered that the board proposed to be established under either bill was unduly large, and that attempts to represent so many bodies and institutions should be abandoned. The medical profession, it thought, would be adequately represented by three medical practitioners, one nominated by the Crown, one by the General Medical Council, and one by the British Medical Association. The opinion was expressed that the earliest age at which nurses should be registered was 24, training to commence after the age of 21; and, with regard to penal clauses, that no penalties should apply to a nurse who acted gratuitously, or to a nurse who nursed for hire but did not claim to be a registered nurse. This memorandum was circulated among the Divisions, but does not appear to have attracted much attention.

At the Annual Representative Meeting at Oxford in the same year,[7] it was formally moved:

> This meeting approves of the principle of the registration of nurses.

This resolution was carried by a large majority, and it was agreed that it should be brought to the notice of the Select Committee of the House of Commons which was then sitting.

The following year, 1905, was one of great activity. Application was made to the Board of Trade for a licence of incorporation to a society named the Society for promoting the Higher Education and Training of Nurses, all the applicants being laymen of influence. They held[8] that as legislation for the State registration of nurses could not be looked for at any early date, something should be done to improve the organization of nursing. To this end

[2] BRITISH MEDICAL JOURNAL, 1888, vol. i, p. 371.
[3] Ibid., 1889, vol. ii, p. 149.
[4] Ibid., vol. i, 1896, p. 157.
[5] Vol. i, 1904, pp. 803 and 859.
[6] SUPPLEMENT, BRITISH MEDICAL JOURNAL, vol. i, 1904, p. 106.
[7] Ibid., vol. ii, 1904, p. 118.
[8] BRITISH MEDICAL JOURNAL, vol. i, 1905, p. 254.

they formed themselves into an association, whose stated objects as stated in the articles were:

1. To promote the higher education and training of nurses.
2. To promote unity of curriculum in the training of persons intended for the nursing profession.
3. To recognize approved training schools.
4. To grant certificates of proficiency in nursing to persons who have passed prescribed examinations after training, and to grant certificates of training and proficiency in nursing to persons who have been trained in recognized schools, and have passed prescribed examinations, provided that the society shall not grant titles or diplomas.

The succeeding articles dealt with the curriculum to be demanded, registration of those certified, removals from the *Register*, and the maintenance of examination and lecture halls properly equipped for lectures and demonstrations.

This application at once met with strong opposition, the Council of the British Medical Association appointing a subcommittee to watch the matter, and various associations representing nursing took corresponding measures. Eventually, evidence against the proposed licence was formally given before the Board of Trade by witnesses who included[9] the Chairman of the Representative Meeting, and the Chairman and two members of Council of the British Medical Association, and by representatives of the Central Hospitals Council and of the Royal College of Surgeons of Ireland. The view expressed was that the time had long passed when private persons should be allowed to group themselves together to carry out State duties. The medical profession was prepared to accept a system of registration which would supply it with the means of recognizing who was a properly-trained nurse, but it would only accept State registration and not pseudo-registration by a private body, more especially one which consisted of laymen only.

When Parliament met, two bills with registration of nurses as their object were again introduced in the House of Commons, and the Select Committee of the previous year was reappointed. This body heard a great deal more evidence, including that which was tendered in favour of registration on behalf of the British Medical Association by the Chairman of the Representative Meeting.[10]

The publication of the report of the Select Committee almost coincided with a further consideration of the topic by the Annual Representative Meeting at Leicester in the same year. On this occasion it was proposed that the resolution passed in the previous year at Oxford should be rescinded, and that the question of the State registration of nurses should be referred to the Divisions,[11] but after some discussion the motion was amended so as to read:

> That the subject of State registration of nurses should be referred to Divisions for their consideration.

The principal recommendations in the report of the Select Committee[12] were that

> A register should be kept by a central body appointed by the State, consisting of representatives of the medical profession, of training schools for nurses, of the public, and of matrons and nurses. This body should decide what persons should be admitted to the *Register* and what evidence of training should be required.
>
> Unregistered persons should not be prohibited from following the occupation of a nurse provided they did not give themselves out as registered nurses.
>
> Four years after the passage of any Act such as that contemplated, the central body ought to submit to the Privy Council a report on the advisability of instituting a separate register for nurses whose training was of a lower standard than that laid down for ordinary registered nurses.
>
> There should also be a separate register for registered asylums nurses, the persons admitted being nurses who had served not less than three years in not more than two asylums and had received the certificate of the Medico-Psychological Association.
>
> All homes purporting to receive patients for profit, or to supply nurses to the public, should work under a licence, and a condition of such licence should be that when nurses were sent out or employed at a nursing home who were not registered nurses, the fact should be definitely stated.

In the following year, 1906, the movement followed much the same course as in the previous year. Two bills were again introduced in the House of Commons and deputations for and against these measures were received by the Lord President of Council. Meantime the Medico-Political Committee of the British Medical Association, in accordance with the resolution of the Representative Meeting the previous year, submitted the subject of nurses' registration to the Divisions in the following form:

1. Does the Division approve in general of the method o registration for nurses proposed by the Select Committee of the House of Commons?
2. Does the Division approve of the separate register of midwifery nurses?

At the same time the committee caused to be published[13] a memorandum in which the main recommendations of the Select Committee of the House of Commons were summarized. A certain number of replies from various Divisions were received, and the whole question was again discussed at the Representative Meeting which was held that year in London.[14] The discussion ended in the adoption, by 90 votes to 3, of the following resolution:

> This meeting approves of the recommendation of the Parliamentary Select Committee that there should be a State registration of nurses, and is of opinion that on any central council or board appointed the medical profession and the nursing profession should be adequately and directly represented.

To this resolution it was proposed and agreed, with one dissentient, to add the following words as a rider:

> The representation of the medical profession on the Central Nursing Board should be at least one-half of the number of the members of that body.

PRESENT POSITION.

The following year, 1907, was one of comparative inaction, though two bills were again introduced in the House of Commons. Last year, 1908, the same bills were again introduced into the House of Commons, while a third bill dealing with the same general subject was introduced in the House of Lords on behalf of the Central Hospitals Council. This bill, to quote from a note on the subject published in this JOURNAL at the time,

> ignored the principle which the Legislature has followed in regard to registration of medical men, solicitors, dentists, pharmacists and midwives, and its effect would have been to place the control of the public safeguard for the efficiency of nurses entirely in the hands of hospitals and other training institutions, the governing bodies of which are selected for their administrative capacity in hospital management and not with any regard to their capacity for directing the training of nurses.

As will be gathered from this passage, the bill was rejected. It was formally opposed on behalf of the British Medical Association, and received short shrift.

Subsequently both the bills introduced in the House of Commons were allowed to drop, but immediately afterwards one of these bills, that which the Council of the British Medical Association on the advice of the Medico-Political Committee was disposed to favour, was introduced in a modified form into the House of Lords. Here it was amended and reamended on multiple occasions, but finally passed the third reading by a large majority and was remitted to the House of Commons, by whom it was ordered to be printed on November 18th. Ireland is included in its scope. At first there was some doubt whether this would be the case, as the Local Government Board in Ireland objected. Its objections were withdrawn, however, owing to the urgent desire for Ireland to be included in the bill, which was expressed at various public meetings in Ireland.

In the final moulding of this bill the Medico-Political Committee of the British Medical Association had, it is understood, considerable say. The more important provisions of the bill are as follows:

> The establishment of a Council of 16 persons; 3 being appointed by the Privy Council (1 at least of these being a woman); 1 medical man by the Local Government Board; 1 medical man by the General Medical Council; 3 medical men by the British Medical Association (1 to be resident in England, 1 in Scotland, and 1 in Ireland); 1 medical man by the Medico-Psychological Association; 7 direct representatives of registered nurses (4 nurses to be elected by those having addresses in England or Wales); 1 by those in Scotland, 1 by those in Ireland, and 1 (who must be a past or present matron of a public hospital for the insane) by nurses in the Nurses' Mental Register.

The election, however, of these seven direct representatives will not take place until the Lord President

[9] BRITISH MEDICAL JOURNAL, 1905, vol. i, p. 1062.
[10] Ibid., p. 1186.
[11] SUPPLEMENT, BRITISH MEDICAL JOURNAL, vol. ii 1905, p. 140
[12] Ibid., p. 158.
[13] SUPPLEMENT, BRITISH MEDICAL JOURNAL, 1906, vol. i, p. 78.
[14] Ibid., vol. ii, p. 121.

of Council certifies that the register of nurses is sufficiently advanced to admit of an election by registered nurses. Meantime their places will be filled as follows:

Two past or present matrons selected by the Matrons' Council of Great Britain and Ireland; 1 past or present matron of a public asylum for the insane, to be appointed by the Asylum Workers' Association; 1 nurse by the Society for the State Registration of Trained Nurses; 1 nurse by the Queen Victoria's Jubilee Institute for Nurses; 1 nurse by the Royal British Nurses' Association; 1 nurse by the Irish Nurses' Association.

In other words, the Nurses' Council is to be formed under this bill of 6 registered medical men, of 7 direct representatives of nurses, and of 3 persons who need not necessarily belong either to the one class or the other.

The councillors are to hold office for five years, and, besides maintaining a *Nurses' Register*,

1. To frame rules (A) regulating their own proceedings; (B) regulating the issue of certificates of registration and the conditions of admission to the register of nurses; (C) regulating the course of training and the conduct of examinations and the remuneration of the examiners; (D) regulating the admission to the register of persons already in practice as trained nurses at the commencement of this Act; (E) regulating, supervising, and restricting within due limits the practice of registered nurses; (F) defining the particulars required to be given in any notice under this Act.
2. To appoint examiners and inspectors.
3. To decide upon the places where and the times when the examination shall be held.
4. To issue and cancel certificates of registration.
5. To publish annually a register of nurses containing the names, addresses, and qualifications of nurses who have been duly registered under this Act.
6. To decide upon the suspension or removal from the register of the name of any nurse for any breach of the rules and regulations from time to time laid down under this Act by the Council, or for conduct disgraceful in a professional respect, and also to decide upon the restoration to the register of the name of any nurse so suspended or removed.
7. To take proceedings against persons guilty of offences under this Act.

Any person within three years from the date at which the Act comes into force can be registered on showing that he or she is at least 21 years old, of good character, and either—

(1) holds a certificate of training for such period as may be prescribed by the rules framed under the provisions of the Act from a hospital or from hospitals approved by the Council, or from an institution or institutions which the Local Government Board recommend, and certify to be wholly or partly maintained out of rates; or (2) holds a certificate of similar training as a nurse authorized by the Lords Commissioners of the Admiralty for the sick berth staff of the Royal Navy, or as a nurse authorized by the Army Council for soldiers of the Royal Army Medical Corps; or (3) holds a certificate from the Local Government Board for Ireland, that she possesses the qualifications prescribed for the purposes of section fifty-eight of the Local Government (Ireland) Act, 1898; or (4) produces evidence satisfactory to the Council of training prescribed by the rules framed under the provisions of this Act, and has in addition been for at least three years in bona fide practice as a nurse, or employed as a nurse in a naval or military hospital.

After the expiration of three years certification can only be obtained by satisfying the Council that the applicant has been trained in an approved hospital or hospitals, or in an institution recommended by the Local Government Board, or in the navy or army, and by passing such examination as the Council may prescribe, or producing a certificate of having passed an examination which the Council will accept in lieu thereof. The register is to be kept in two parts, one being a general register, and the other a register of asylum-trained nurses. The persons admitted to the latter must hold the certificate of the Medico-Psychological Association, or its equivalent granted under conditions approved by the Council, or must have dualified as mental attendants in the Royal Army Medical Corps.

Provision is made for a fee of 3 guineas for examination, of 2 guineas for registration, and for a payment of 2s. 6d. annually by all registered nurses.

No penalty is imposed on persons following the occupation of nursing unless they pretend they are registered nurses. Training institutions not accorded recognition by the Board may appeal to the Privy Council, and nurses removed from the *Register* may appeal within three months from the date thereof and to the High Court of Justice. All rules drawn up by the Council must be approved by the Privy Council.

Finally the Council may, on representation made within four years from the commencement of the Act, be given power to institute a register of nurses, to be called a register of "associate" nurses, having a lower standard of training than that required for registered nurses, but such nurses would not be entitled to use the word "registered" except in connexion with "associate," and would have no voice in elections of direct representatives.

Compared with its predecessors, this bill, which of course still has to run the gauntlet of the House of Commons, may be regarded as a compromise, as an attempt to meet the views of various conflicting parties. It accords to the medical profession a considerably higher proportion of representatives than the Medico-Political Committee in its original memorandum asked for, three of the six medical representatives being appointed by the British Medical Association itself. It secures the interest of asylum workers by placing one nomination in the hands of the Medico-Psychological Association, and by also giving nurses on the Mental Register a direct representative. It secures alike to private and official training schools a continuance of their present powers.

It does not attempt to interfere with the practice of nursing by women who have undergone no training or only part training, but puts a premium on efficient training by conferring on persons deemed efficiently trained a definite status and a title which cannot be used by other people. On the other hand, those admitted to the status of registered nurse will be submitted to discipline and control, having to obey rules laid down for their conduct, or in default risk the erasure of their names from the *Register*. These rules before they take effect will have to be approved by the Privy Council, and at the last session of the General Medical Council it was resolved to suggest to Government that before they were approved by the Privy Council they should be submitted to the General Medical Council, as in the case of the rules of the Central Midwives Board.

Finally, as regards the history of the movement, there is one curious fact. From the beginning the arguments respectively used by the opponents and advocates of the registration of nurses have scarcely varied. Everything that has been said for or against can be found in effect set forth in issues of the BRITISH MEDICAL JOURNAL published twenty years or so ago.

MEDICAL PROTECTION.

WE are requested to state that the National General Insurance Company, Limited, is now issuing policies of insurance to members of the London and Counties Medical Protection Society, Limited, on the following terms:

1. The London and Counties Medical Protection Society, Limited, will, as heretofore, undertake the defence of members in actions brought against them, where, in the opinion of the Council, such actions are proper cases to be defended.

2. In the event of the defence being unsuccessful, and of judgement being given against the member sued, the National General Insurance Company, Limited, will pay the amount of damages awarded, together with the plaintiff's taxed costs, not exceeding in the whole £2,000 in any one year for any one member. The effect of this will be that in all cases where the Council undertakes the defence, the member will be fully protected (subject to the limit mentioned), whatever the ultimate result of th case may be.

3. The premium to be charged by the National General Insurance Company, Limited, for the indemnity has been arranged at 10s. per member per annum, with the addition of 5s. in respect of each qualified assistant and 2s. 6d. for each dispenser employed.

We are informed that large numbers of the members of the London and Counties Medical Protection Society have already taken out the above policies. The insurance is available only to members of the London and Counties Medical Protection Society, and the benefits of such insurance can be obtained only when actions are defended by the society at its own cost. As the Council of the London and Counties Medical Protection Society does not knowingly defend actions in which its members are in the wrong, this complete indemnity will not benefit any

medical or dental practitioner who is careless or culpable in dealing with his patients. Full particulars of these policies can be obtained either from the National General Insurance Company, King's House, King Street, London, E.C., or from Dr. Hugh Woods, 31, Craven Street, Strand, London, W.C.

Nova et Vetera.

AN OLD PHYSICIAN'S CLASSICAL EDUCATION,

BASED ON MATTHEW BAILLIE'S UNPUBLISHED PAPERS.

IT may be conjectured that the old physicians aimed at the acquisition of classical learning on the same grounds as the other well-bred men of their times, and that they studied the ancients not so much for learning's sake as because not to be versed in Latin and Greek was to lose caste among gentlemen.

John Hunter, a rugged revolutionary, despised this attitude of mind as heartily as might any modern. "They wanted to make an old woman of me, or that I should stuff Latin and Greek at the university," he said to Sir Anthony Carlisle, referring to his phenomenally short sojourn at St. Mary Hall, Oxford, in June and July, 1755; "but these schemes I cracked like so many vermin as they came before me"' he added, somewhat naïvely, suiting action to word and "cracking" an imaginary insect upon the table in front of him. The anecdote gives us an unconventional, a vivid idea of Hunter and of eighteenth century habits south as well as north of the Tweed. But we need not particularize.

John Hunter of course had been sent to the English University much too late in life, for he was born in 1728, and was 27 and an able surgeon, as well as *viveur*, when set down to a task usually undertaken seven or eight years earlier. Why he was sent to Oxford we do not know, or whether he sent himself. Most probably he went at the suggestion of his brother William, who, a scholar himself, feared that John would suffer in his profession through lack of the ordinary genteel outfit of quotations from the Latin and Greek authors, or—and this was perhaps most important—would continue hampered in his studies by inability to read Latin, which was at that time the international language of science.

It would be interesting to know what Hunter saw and heard at a clerical and leisurely university, where Jacobitism interested a few vehement spirits overtly, and learning, though dear to many, would seem to have been in permanent hiding. His Oxford life seems to have hardened his feeling towards literature into life-long dislike. In 1775 he writes to James Baillie, his minister brother-in-law:

> I am not anxious about my children but in their doing well in this world. I would rather make them feel one moral virtue than read libraries of all the dead and living languages. You know I am no *scholard*, therefore do not feel the beauty of language when I do not see the use of it.

The letter is characteristic of John Hunter, and of a type of utilitarian semiculture very aggressive to-day. James Baillie, a man of culture himself, afterwards became a Glasgow professor, and was the father of the famous authoress, Joanna Baillie. His son Matthew he was careful to educate well, sending him first to the Grammar School of Hamilton and then to the University of Glasgow. Later the opinion of William, not of plain-spoken John Hunter, was taken in matters educational by members of the Baillie family. It was by the advice of William Hunter that Matthew Baillie chose medicine as a profession, and by the same advice, we must suppose, that, after his father's death, he was entered at Balliol College, Oxford, in 1779. From Oxford he wrote some fourteen letters to his uncle and patron, Dr. William Hunter, in whose London house he lived, and from whose instructions he profited during vacations. These letters, which, with the exception of the first, have not apparently been published, are preserved among her family papers by Miss Hunter Baillie, granddaughter of Dr. Matthew Baillie, to whom the writer desires to tender his best thanks for leave to reprint their more interesting passages.

In a letter dated March 13th, 1779, Matthew writes to his uncle:

> Dr. Sir,—I would wish to receive your advice as my Parent about that plan of study you would wish me to pursue at Oxford. I would wish likewise to talk over with you the manners of the Place, that I may not go unguarded or unprepared to it. I am told that there is a great deal of dissipation in it. I would therefore wish your warmest advice with regard to my Behaviour.

It would be unfair to infer from this last passage that young Baillie was a prig. On the contrary, he was a lad of high character, deeply impressed with a sense of obligation to William Hunter, who, as his guardian, had come to the rescue of his mother, sisters, and himself when the death of Professor Baillie had left them in straitened circumstances. It is interesting to note that, at about this date, the famous Professor Thomas Reid, the metaphysician, who had taught young Baillie logic in Glasgow, writes to William Hunter in praise of the lad's sense and integrity, and hopes they will stand him in good stead in Oxford, where application is not easy.

Continuing his letter, young Baillie refers to the study of languages. As to Latin, Greek and French:

> I would wish to make myself as complete in these as possible.

Writing from Oxford on April 10th, 1779, he says:

> Upon Thursday last I entered a Student of Balliol College and underwent all these Forms which were necessary at my entrance. I found no room ready for me at Baliol, but am living at present in another Gentleman's room who has gone to London.

In the letters which follow very little more is said of college life; indeed, they are the reports of a student to his master, but as such they contain a marvellous record of hard work.

Speaking of translations on May 5th, a few days after entering at Balliol, Baillie writes:

> I now send you part of what I have done, transcribed from my little books, exactly in the order in which it lies there. I have not picked out one passage and omitted another, according as I thought them good or bad, but you have it exactly in its proper order. When it is sent you I beg your opinion about it whenever you have time to write, but at the same time would wish you would shew it to no person. It will only bear the examination of those who are willing to make every allowance.

Then follows a note which implies that he left Glasgow with a good knowledge of Homer. He said:

> Since I came to Oxford I have likewise read eleven books of the Odyssey with a more critical eye than ever I did any Greek before.

He translates a passage of Caesar into English and retranslates into Latin without reference to the text. The translation accompanies the letter, and has been sparsely, and perhaps hesitatingly, corrected in the great William Hunter's handwriting. Several other translations occur in this correspondence.

In the same letter Baillie writes conscientiously about his expenditure:

> If you think it proper I will send you now and then a general scheme of my expense, and if there is any article which can be cut off with decency I beg you would retrench it. I would wish to live at the least expense it was possible, but at the same time not appear mean.

He attends his tutor Prosser's lectures, and at a later date thanks his uncle for politeness shown by him to this don and to Dr. Lee. He also makes mention of Professor Whyte, Laudian Professor of Arabic, and of a Dr. Leigh. The mention of a professor of Oriental languages suggests that his studies went beyond Latin and Greek.

On October 14th, 1779, we find him writing to his uncle:

> Altho Dramatic Compositions in every Language are the most difficult, yet I do not find this Author (Sophocles) so troublesome as I expected.

Later he says:

> I finished yesterday the Plays of Sophocles.

On November 14th, 1779, he declares:

> I at least can say that I write Latin at present more easily than formerly.

About this time, being already a Glasgow exhibitioner, he asks his uncle and guardian to help in procuring for him another small exhibition. He obtains Bishop Warner's exhibition in succession to a Mr. Hadow (a family name

still well known in the university), and thanks William Hunter for applying for it in his behalf:

> If my other qualifications should be mean I hope at least it shall never be said I have been deficient in gratitude.

The small exhibition is "a very necessary addition in so expensive a place as Oxford." The letter is signed, "Yours most affectionately."

In 1780, when still only a lad of 18, he reads the plays of Sophocles a second time between New Year's Day and February 17th. He notes that the choruses are obscure. At the same time he despairs of ever writing Latin as purely and with as much facility as English. His taste is evidently improving, and he has travelled a long distance since he wrote from Glasgow to his uncle about the neglect of scansion prevalent in the North—a neglect that must have made nonsense of Virgil to a Scottish student. He wrote:

> Quantity is still shamefully neglected in Scotland. We scarce know what is meant by Quantity. Since you have wrote me, I have been paying attention to it, and yet after all I shall be found very deficient.

At Oxford he made up for all deficiencies, and got through a prodigious amount of classical study, having, as he himself states, read Caesar, Livy, Cicero's *Tusculan Disputations* and *The Offices*, Terence (the Latinity of this author being found impure), Tacitus, Seneca, eleven books of the Odyssey, Plato's *Dialogues*, Xenophon's *Anabasis* (much admired by him), Demosthenes, selected orations of Aeschynes, and, as before mentioned, Sophocles (twice), besides translating into English and then retranslating into Latin five or six books of Caesar and the *Tusculan Disputations*.

All this time he was bent on becoming a physician, and, indeed, studied hard under William Hunter in his vacations, thus laying the foundation in his Oxford days of his unrivalled anatomical knowledge.

Matthew Baillie's own account of his early education is contained in an unpublished memoir of his life, written "with a view of furnishing authentic materials." It is interesting as throwing light on the excellence of education in the Scotland of the eighteenth century and on the boyish ideals and experiences of a learned physician of the past. Dr. Baillie writes as follows:

> I went to the English School at Hamilton when I was not quite five years old, and remained there till I was near seven. The schoolmaster's name was Allen, a most respectable man, and he was married to a sister of my Father. I was taught writing and arithmetic by Mr. Telfair, who succeeded Mr. Allen after his decease. I went to the Latin School at Hamilton before I was quite seven years old, and remained there six years. The Master of the School was named Whale. He was a man of quick parts, of various knowledge, and with a considerable turn for humour. He was an excellent Latin scholar, but was not very thoroughly acquainted with the Greek, altho he had enough of the latter language for the creditable teaching of his school. I was there taught both Latin and Greek, and was consider'd as a good scholar. I was most commonly at the head of my class, but this arose entirely out of my emulation and industry. There were several Boys in the School of better Parts than myself, but they had less diligence. When I left the school in the afternoon, and went to my Father's house, the first thing I did was to prepare myself for the lessons of the next day. When this was done, I played with all the wildness and spirits of Boys at that early age.
>
> Before I had quite completed my 13th year I left school and became a Student at the University of Glasgow. I first enter'd the Latin and Greek Classes, and went through a full system of classical and Philosophical education there in the course of five Sessions. The Professors in these various departments were men of considerable eminence, were exceedingly attentive to their duties, and had the power of exciting great emulation among the students. I still maintained the same character among the students which I had done at school, and chiefly from my industry and emulation. I had it likewise very early and very frequently impress'd upon my mind by my Father, that my chance of future success in life depended entirely upon my industry and good character. In the year 1779, when I had not completed my 18th year, I was appointed to an Exhibition in Balliol College Oxford by the Professors of Glasgow, and in April of that year came up to England. I thence waited immediately on my arrival upon Dr. Hunter my Mother's Brother in Great Windmill Street, who received me kindly, and I staid with him about ten days before I went to Oxford. He was the Relation who had it most in his power to be useful to me with regard to my future prospects, and this determined me to enter into the medical Profession. I had no strong liking for this Profession, as happens to some individuals, but I had no dislike to it, and I enter'd upon it willingly. At this time too I waited upon Mr. and Mrs. Hunter, and they received me kindly, altho' there was a disagreement between Him and his Brother Dr. Hunter. After being ten days in London I went to Oxford and remained there nearly eighteen months without interruption. I had the advantage of a very good Tutor, the Revd. Mr. Prosser, now the Revd. Dr. Prosser, a Prebendary of Durham, and improved myself considerably in the Classics, more especially the Greek, and acquired by reading some general knowledge. At that time Science was very little cultivated at Oxford, and I gained little in addition to what I had brought with me from Glasgow.

He studied mathematics, however, to some purpose while at college, though he does not tell us to what point. In 1780 his medical studies began in London, but he continued to keep his terms in Oxford. It is not our purpose to describe Matthew Baillie's medical education here, as that is sufficiently recorded by Wardrop, his biographer. He found William Hunter "mild and kind," never "familiar and warm," though he enjoyed his confidence to such an extent that he became chief teacher in his Windmill Street dissecting-room in 1781. Of William Hunter as a teacher he says:

> He excelled very much every Lecturer whom I ever heard, in the clearness of his arrangement, the aptness of his illustrations, and the elegance of his diction. He was probably the best Teacher of Anatomy that ever lived.

V. G. P.

THE BRITISH MEDICAL BENEVOLENT FUND.

A MEETING in support of the British Medical Benevolent Fund was held in the Library of the Royal College of Physicians, London, on Tuesday, with Sir JOHN TWEEDY, President of the Fund, in the chair.

Dr. SAMUEL WEST (Treasurer) said that the Fund was founded in 1836, and during the past seventy-three years had expended over £70,000 in grants, and rather more than that amount in annuities. The object of the Fund was the relief of medical men and their families in severe and urgent distress. The only qualification to benefit by the Fund was poverty and distress. Temporary distress was relieved by grants of money, and permanent ill health or old age was relieved by annuities. The value of the annuities was from £20 to £26. The grants of money varied from £5 to £20, and last year over £2,000 was distributed in that manner. The Fund stood as a bulwark between the benevolent public and the begging-letter writer and other impostors.

The BISHOP OF OXFORD (Dr. Paget) said that the Fund made provision by pension and by grants for medical men who had fallen into poverty by no fault of their own, or for the wives and children of medical men when left in poverty. There was no profession in which a man was so much compelled without any choice of his own, without any chance of escape, to run such great risks of unavoidable impoverishment involving himself and his family. In most cases, when a student came to the end of his education for the medical profession, when he was qualified to seek for practice and hoped to earn a living, he had spent a very large sum of money and had drawn all that he could from his home. In other words, most medical men by the time they qualified for practice had fairly well exhausted their capital. From the very first the medical man had to meet expensive demands. It was appalling to think what was required of a medical man in the way of keeping up appearances. He must not only have a house, but it must be of a considerable size and in a good position. Then there was the necessity of spending a good deal of money on clothes. He was expected to show a sort of chastened expensiveness in his attire, a kind of sober and unostentatious dignity in his apparel. He was not required to be smart, but the medical man must certainly not be casual or indifferent in his dress. Altogether he must incur a considerable outlay long before he could hope to begin to earn anything at all. Then he must have a carriage or a motor, for a medical man who proposed to see his patients without would find them very few. It was also generally expected of a medical man, and wisely so, that he should be married, and thus he incurred quite early in his career a very considerable burden of anxiety and expense. It was of the utmost importance that the medical man should have the health to support that burden of anxiety for many years so as to be ultimately rid of pecuniary embarrassment, for a doctor was lucky if he was quit of debt by the time he was

forty years of age. Everything, then, depended on his health and ability to stand hard work. They were his one asset without which theory, education, ability, skill, and recommendations were useless. The medical man therefore risked his all upon his health, and his health was exposed to extraordinary risks, considering the load of anxiety under which he worked. His time for sleep and his time for meals was uncertain. He had to risk exposure to all sorts of weather at all times of the day and night; he could never be sure of a spell of rest for many years, and he hardly ever got a holiday. He was constantly exposed to the risk of infection from fever and blood poisoning. Therefore he was risking his health all his life, and he was doing this under very real conditions of difficulty and strain, so that the medical man's hold upon health and power of work was secured to him by the most precarious tenure. It must be remembered also that health meant more to a medical man than to most men, for the public preferred to employ a doctor who was himself well and strong. It was a disastrous matter for a medical man to have a long illness, and it was disheartening for him after a protracted spell of ill-health to take up his practice again, for often it would be found that his practice had more or less left him. The public turned to those medical men of whose stability of health and readiness for work they could be assured, and it was pathetic to think how often a man struggled through a convalescence from illness, only to find that it would take him months or years to recover lost ground. That great asset of health on which a medical man staked his all was of such a precarious nature that the need for the British Medical Fund was clearly indicated. Another method of understanding the urgent necessity of this Fund was by looking through the list of the cases relieved. The want which was relieved by the annuities given by the Fund was urgently pathetic, but behind that list of annuities there were a great many deserving cases for which no money at all could be provided. When it was remembered that the subscriptions for the year were unfortunately not enough to warrant any grant at all in a large number of necessitous and deserving cases, then it was recognized what a great need there was for the encouragement of this Fund. His father, Sir James Paget, lived and worked under the full stress and strain of those risks which had been described. Sir James Paget through all his early professional life was burdened with debt, mostly not his own, and he was, moreover, in most precarious health; at first he did not and could not save anything at all. Speaking of the risks which a professional life such as that of Sir James Paget involved, he doubted whether, could they have been foreseen, any prudent man would have incurred them. It might be summed up in the fact that if Sir James Paget had died before he was 47 he would have left his wife and children in extreme poverty, for before that time he had not been able to save a shilling, and the largest life insurance he could have afforded would have been quite insufficient for bringing up his children. The Bishop concluded his appeal by saying that when he thought of the gallant courage shown by his father in his work, of his uncomplaining fortitude, of his ceaseless and invincible diligence in his professional labours, of his daily cheerfulness, and of the patience with which he bore the risks described, he did not doubt that he would be successful in pleading for the Fund which was devoted to the benefit of medical men.

The LORD MAYOR OF LONDON said that he had always felt the highest admiration for the medical profession and for its self-denying devotion to the service of the public. He referred, first, to the family practitioner, who was very often the sole friend and comfort in a bereaved household, and then referred to the successful work done by the Corporation of the City of London through its medical officers in preventing disease in the Port of London. The Corporation of the City of London was engaged in the prevention of the entrance of disease into this country. It was enabled to carry out this work successfully because the medical profession had worked for years in order to discover means for preventing the spread of disease. As the result of those labours its medical officers were able to stop the entrance of disease, and thus the city was saved from diseases which might decimate the population. It must be remembered also that the prevention of disease was an excellent thing for the State, because health was considerably cheaper than disease. He considered that the State and the public had done very little in return for the benefits which the medical profession had conferred on the country, and it seemed to him that the public should be called to its duty in that respect, and he hoped that the Fund would benefit greatly as a result of the meeting.

Sir R. DOUGLAS POWELL suggested that if every member of the medical profession were to contribute even a small sum to the Fund it would have a great effect on its position, and that good effect would be increased if medical men interested their friends in the work of the Fund and recommended it to the notice of the charitable public.

Sir JOHN TWEEDY, in a few concluding remarks, pointed out the importance of what the Lord Mayor had said in regard to the economical value of the medical profession in preserving the health of the nation.

The business of the meeting terminated with a cordial vote of thanks to Sir John Tweedy for presiding.

THE UNIVERSITY OF BRISTOL.

THE EXPECTED CHARTER.

IF rumour be true the charter for the new University of Bristol will be granted by the Privy Council before Easter, and the university will come into being before the new year. The Committee that has worked so long and so hard for this object may well congratulate itself on reaching the goal that it had in view, for it is only a little over thirty years since the University College was opened, and but one since the first prospectus and list of donations towards the university was published.

THE MEDICAL SCHOOL.

It will be of interest to pass rapidly through the successive stages since the germ of the university first started into activity. It may be claimed, without fear of contradiction, that the first step towards the goal now so nearly won was the foundation of the medical school in the year 1814, or perhaps, to be more correct, the course of lectures given by Dr. J. C. Prichard, Mr. Bowles, and Mr. Shute at the Royal Infirmary in that year. In 1818 these lectures were recognized by the London authorities, and the first prospectus of the Bristol Medical School followed in 1832. Since that time to the present—for the school was affiliated to the college in 1893, and made a faculty in 1907—a regular course of medical instruction has been carried out; and though the lecturers had little to do with the foundation of the college, it was due to the needs of that school and the desire to have the means of higher education, that the idea occurred to others that a university college was required. To complete the history of the connexion of the medical school with the college, it may be added that after being housed for some years in King Square it was moved to Old Park, and from that site to the present buildings now part of the college.

THE UNIVERSITY COLLEGE.

According to Latimer, the author of *The Annals of Bristol*, it was in the spring of 1873 that a proposal was made to found a technical college of science, of which the medical school was to form a part, and an appeal was made for subscriptions to carry out this idea. The chief promoter of this scheme was the present Bishop of Hereford (then head master of Clifton College), and he was strongly supported by Professor Jowett, Dr. Temple (then Bishop of Exeter), Sir Henry Roscoe, and Mr. E. A. Freeman. As a result, the University College was started in the autumn of the same year, with a staff of two professors and four lecturers, being housed in a temporary premises in Park Row, a building now occupied by the South Midland Royal Engineers.

From the first the history of the college has been one of continued success; a very large number of students have passed through it, and it was found necessary at different times to increase the staff and enlarge the buildings, till at the present time there are nine professors, one assistant professor, twenty-four lecturers, and three readers in the

Faculty of Arts and Science, and eight professors and twenty-one lecturers in the Faculty of Medicine.

The available space in the building in Park Row soon became exhausted, and a move was made to the present site, where a building valued at £45,000 was erected.

The Proposal for a University.

Though the college has always proved a great success, it was soon felt that the educational equipment of the city would not be complete till it could grant its own degrees and provide a place and afford facilities where original work could be carried out. Further, it was felt that if a high standard of work was to be aimed at it was essential that those who gave their time to instructing others should be well paid, for it would be impossible to command the services of the best teachers if the emoluments were insufficient to attract and to retain the best men. For this a considerable endowment would be required, and it was with this object in view that a movement was made by certain prominent citizens in 1907 to start a fund for the endowment of a university. Following the example of some of the recently created universities of the North of England, a sum of a quarter of a million was asked for, and the recent gift of Lord Winterstoke of £15,000 about completes that sum.

Some years ago there was started to assist the college in its financial needs a society known as the University College Colston Society. It was founded on much the same plan as the well-known political societies which bear the name of the great Bristol philanthropist—that is to say, an annual dinner, a subscription list, and a speech by some person distinguished, in the case of the college, not in the political but in the educational world. The idea originated with Mr. W. Reid, the proprietor of one of the Bristol papers, who pointed out that more than half of Colston's gifts to the city were for educational purposes, and that the citizens of Bristol would be carrying out the objects and aims of Colston if they helped towards the higher educational movement of the present day. For some years this society has met annually, and the dinner and the donations have both helped in their way to advance the college. But of all the meetings, that which will be longest remembered was the meeting of January 14th, 1908, for it was then the proud privilege of the president, Mr. G. A. Wills, a member of the well-known Bristol family, to announce that his father had given the sum of £100,000 to the university fund, and by this magnificent gift had assured the existence of the Bristol University. Mr. Henry Overton Wills, the gentleman who has given this sum, has not lived in Bristol for some years, but his name will always be remembered as the founder of the university.

This magnificent gift of Mr. H. O. Wills overshadows the donations of others, but a large number of wealthy persons in the city have given handsomely, so that as mentioned before the sum of about £250,000 is now in hand for building and endowment.

It would be invidious to mention the names of only a few of the many who have worked so hard for the university, for some one might be omitted; but a notice such as this, which is intended to be a short record of the many steps that have been taken, would be very imperfect if no reference were made to Mr. Albert Fry, who unfortunately died before he saw the fulfilment of his hopes, to the Bishop of Hereford, the Bishop of Bristol, and the Right Hon. Lewis Fry. There are many more, and only space prevents their mention.

The Merchant Venturers' College.

But unfortunately there have been difficulties in the path, and these are not even now removed. It was hoped that it would be possible to come to some agreement with a technical college that has for many years been in existence in Bristol known as the Merchant Venturers' Technical College. This institution had its origin in a school founded in March, 1856, under the title of the Bristol Trade and Mining School, and was taken over by the Society of Merchant Venturers in 1885. At first it was known as a school, but to bring it into line with like institutions in other towns the name was changed to college. The society that owns the college is the last surviving of the old trade guilds of Bristol, and, like some of these in London, has made use of its surplus funds to further education. The foundation of this college was at the time of its opening commented on by a prominent citizen who expressed a regret universally felt that "while we have a grammar school and a university college, both admirably officered and doing good work, but sadly hindered by lack of funds, we see a gigantic trade school arising to be a rival to both of them." This has unfortunately proved only too true. When the university scheme was started it was hoped that some support would be granted by the city out of the rates and this has been promised, but only on condition that some working agreement is come to between the two bodies. Negotiations have been going on now for a very long time, and it is hoped that an agreement may be come to. If report be true the university committee have come to an end of their patience, and it is hoped that the Privy Council will grant the Charter in spite of the fact that the Merchant Venturers will not join in the university. It is possible that the question of the rate may be got over, but a very practical solution of the difficulty would be for the university to be independent by raising another £100,000 which would put it in a better position though not as good a one as if helped by a rate.

The Aims of the University.

The Draft Charter was laid on the table of both Houses of Parliament last autumn, and for the due time. It is now before the Privy Council, and only requires to be laid before the King to receive confirmation.

This account would not be complete without some reference to the aims of those who are promoting the university. Hitherto the students have been trained and instructed mainly for the University of London, and, in the case of the medical students, for the Conjoint Board as well. It is hoped soon that there will be a complete system of examinations as well as instruction for degrees granted by the University of Bristol, and it is quite certain that the standard of work required will not fall below that of either the older or of the more recently formed universities. Bristol, with the magnificent endowment obtained, will be able to offer as good an education and at as reasonable a cost to parents as any in the United Kingdom, while it is intended that the degrees shall rank as high. It is further hoped that by awarding bursaries and scholarships to deserving students that original work of a high order may be carried on within its walls which will bring renown to the university and to the city.

The present building will, of course, have to be much enlarged, and the committee were very fortunate in being able to purchase the buildings of the Blind Asylum. This will give the university a fine frontage on the main road, though the present building will have to be replaced by a more suitable one. No plans are at present published, and, indeed, it would be premature to do so, for until the charter is actually in the hands of the committee no steps can be taken.

LITERARY NOTES.

We have received the first copy of *National Health*, a magazine which appeals to all interested in questions of public health. It is the official organ of the Women Sanitary Inspectors' Association, the Children's Protection League, and the Women's National Health Association of Great Britain. Among the contents of the first number is an article on the Children's Protection League, by Lord Monkswell. Mr. Henry Curtis, F.R.C.S., contributes a paper on rickets; Dr. A. Nimmo Walker discusses the Midwives Act in its relation to the blindness of infants; Dr. O. E. Starr, L.D.S., discusses the question of the care of the teeth; Dr. Elizabeth Knight writes on the social and sanitary conditions of prison life. There are also articles on the passing of the woman sanitary inspector, a second-grade nurse, and the medical inspection of school children, with reports, editorial reflections, and other matter. The editorial offices are at the rooms of the Medical Society, 11, Chandos Street, Cavendish Square, W

Among the books in Messrs. Methuen and Co.'s New Announcement List, an early copy of which we have received, is one entitled *Drugs and the Drug Habit: Chapters on the Dynamics of a Remedial Particle*, by Dr. Harrington Sainsbury, Senior Physician to the Royal Free Hospital. The purpose of the work is said to be to point out the precise relation in which the medicament stands to

disease, and how it is fitted to solve the problem, physical and psychic, which the malady sets; to claim for the drug its position as a natural force obedient to natural laws, and to show how impossible it is to separate it, including its latest congener the *serum*, from other classes of natural products; to make prominent the fact that drug habits are but instances of a law fundamental throughout nature, and to discuss the broad lines upon which prevention and cure should proceed in the treatment of habit; in brief, to naturalize the drug both in its use and abuse.

Messrs. Bale, Sons, and Danielsson, Limited, will shortly issue a History of the Reading Pathological Society, written by the President, Dr. Jamieson B. Hurry. This society ranks as one of the oldest medical societies in the country. The good work it has done is shown by the numerous original communications which have been published during the past seventy years, to which full references will be given. The volume will be illustrated by a series of portraits, and contain descriptions of the medical library and pathological museum, which form so essential a part of every progressive medical society.

Mr. Alston Rivers will publish at once a volume entitled *Labour and Housing at Port Sunlight*, by W. L. George, author of *France in the 20th Century*, who has made a careful survey of the first attempt at a model village. Though his opinion on the whole is favourable, he freely criticizes the system.

We had not intended to say anything further on the subject of Esperanto at present, but we have received a letter from Dr. G. S. Robinson of Eastbourne which courtesy compels us to notice. Referring to the statement which we quoted from Mr. Remy de Gourmont as to a friend who asked "what mental aberration had led Esperantists to use viol (rape) to denote a violet," Dr. Robinson says: "The answer, of course, is that *viola* is the Latin for a violet, and (as with most scientific terms), the Esperanto equivalent, 'violo'—not 'viol,' by the way—is taken direct from that language as a common source. The Latin, English, and French languages all use the root-word 'viol' for both 'a violet' and 'to violate'; but Esperanto never uses the same root-word for two different meanings, and so prevents any possible confusion." *Violo*, on the whole, strikes us as a more infelicitous name for the proverbially modest flower than *viol*. But on looking at the vocabulary in *Esperanto Self Taught*, by Mr. William W. Mann (London: E. Marlborough and Co.), we find at p. 17 *violeto* given as the Esperanto equivalent for violet. The book bears what may be taken as the imprimatur of Dr. Zamenhof, the founder of Esperanto; it may, therefore, be assumed that it contains no error. There is evidently some difference of opinion among Esperantists about the proper form of the word. *Non nostrum tantas componere lites.* The fact, however, serves to illustrate our remarks as to the inevitable mutations that must take place in Esperanto as in languages developed by the natural process.

Contract Practice.

PROPOSED FEDERATED SOCIETIES' MEDICAL BENEFIT ASSOCIATION.

THE following circular has recently been issued, and it will be noticed that the promoters of this new organization hope that the scheme may be in working order at the beginning of next April. It will be observed that it is intended to apply to members of dividing friendly societies who live outside the radius of their own society's doctor and have hitherto been unable to take advantage of the facilities for medical benefit at the cheap rate provided by the societies.

FEDERATED SOCIETIES' MEDICAL BENEFIT ASSOCIATION IN CONNEXION WITH THE NATIONAL FEDERATION OF DIVIDING FRIENDLY SOCIETIES,
7, COLEBROOKE ROW, N.

At the 1908 Conference a general desire was expressed that the Federation should do something to place facilities for Medical Benefit at a cheap rate within the reach of those members who, by reason of living outside the radius of their own Society's doctor, were debarred from such benefit. At the same time it was made clear that no scheme that involved Secretaries in additional work, or which interfered in any way with the funds of individual Societies would be generally acceptable.

The Federation Executive now have the pleasure to announce that they have adopted a scheme which, whilst giving members, in whatever part of Greater London they may reside, the services of a local medical man at the same rate as that usually paid in London societies, does not interfere in the smallest degree with the funds of individual Societies nor put upon local Secretaries any additional work of any kind. The scheme will be worked under the name of the "Federated Societies' Medical Benefit Association," and will be managed by a committee of five members appointed by the Executive. The Association will select about 100 doctors, in different localities, and publish their names on a suitable display card, which Societies may exhibit in their meeting rooms. It will then be open for members of Affiliated Societies to choose any name from this list, and, on forwarding the name to the Federation Office, together with a quarter's subscription (1s. 1d.), they will receive in return a receipted membership card which will entitle them immediately to the free services of the doctor whose name the member has chosen.

Many of the doctors whose names will appear on the published list have agreed, if their approval is first sought, to attend other persons in the member's family at the same rate of payment. With this extension it is hoped that the scheme will afford a wide scope of usefulness and place every Affiliated Society in London in a more advantageous position in respect to the facilities for medical benefit which it can offer its members than is at present possible with even the largest Dividing Societies in London.

The scheme is intended to meet the case of only those members who are unable to take advantage of the service of their own Society's doctor, and no Society agreeing to exhibit the Association's card need apprehend the scheme will interfere with the working of local Societies' own medical funds; and in order to make this further sure, the doctors whose names will appear on the Association's list will be found, in most cases, to be the doctors already acting for local Societies.

It is claimed for the scheme that it is simple and effectively meets the desired end whilst avoiding objections which were feared, and it is hoped to get it into working order by the beginning of April. Societies wishing to give their members the advantage of the scheme will be supplied with the Association's card (about 18 by 16 inches) for exhibition in their meeting rooms. This card will contain all necessary information, and members need only be referred thereto. Applications for cards should be sent to the Federation Office.

RULES.

1. Members of any affiliated Society may become members of the Association.
2. The contributions to the Association shall be 1s. 1d. per quarter *payable in advance*, by post. Two or more quarters may be paid at the same time, but in all cases this card must be sent for receipt to be acknowledged thereon, and a halfpenny stamped envelope enclosed for its return. No member shall be entitled to benefit during any period for which the contribution has not been paid.
3. For such payment the member shall be entitled to receive free medical attention and medicine (but not attention or appliances in surgical cases), and a certificate of inability to work where such, in the doctor's opinion, may be necessary, from the doctor whose name appears on the other side of this card.
4. Each member must observe his doctor's regulations as to surgery hours and the giving of notice for home visits; and this card must be produced at each visit to or from the doctor.
5. Members may change their doctor at the beginning of any quarter but not at any other time. Notice of any desired change must be sent with the contribution.
6. The Association shall be managed by a Committee appointed by the Executive of the National Federation of Dividing Friendly Societies and all funds shall be banked under the control of two trustees.

FRIENDLY SOCIETIES AND MEDICAL CONTRACT PRACTICE.

SIR,—It is pleasing to note that Dr. F. W. Styles's letter has created some stir in the profession, and still more so to know that Denbigh and Flint have taken some action. Would not the profession be better served by their Divisional representatives if such *actions* spread, instead of so much grumbling in the medical and lay press?

I venture to suggest that the action should be organized by the central governing body, and a big effort made to make it general throughout the land, as there must be a considerable amount of overlapping in practices on the border of two Divisions.

Further, I venture to suggest that the manner in which the parish appointment is worked is to some extent responsible for clubs, with low fees for women and children. The parish doctor finds it better to take a few shillings per annum than to be obliged to see the patient for nothing as a pauper. Why should a pauper be compelled to have his doctor chosen for him? The appointment should, to my mind, be open to all who care to put their names down for the work, and the pauper be given choice.

In a few hours a clerk could ascertain the amount of the parish pay earned by each doctor for the past year at the cost of a few shillings to the ratepayers.

One further grumble in conclusion. Why should a doctor who has an infectious case which cannot be conveniently isolated at home be compelled in many districts to hand his patient over to the medical officer of health at the isolation hospital?—I am, etc.,

January 18th. GRUMBLER.

Medical News.

We are requested to state that Dr. Phineas Abraham has resigned the post of Surgeon to the Hospital for Diseases of the Skin, Blackfriars.

Dr. James Menzies of Worksop has, on the recommendation of the Duke of Portland, Lord-Lieutenant of the county, been appointed a Justice of the Peace for Nottinghamshire.

At the meeting of the Society of Tropical Medicine and Hygiene, to be held at 11, Chandos Street, Cavendish Square, W., on Friday next, at 8.30 p.m., Dr. H. G. Waters will read a paper on a new pathogenic spirochaete associated with bronchitis and fever; and Dr. T. Fausset Macdonald will present a communication entitled Tropical notes from Barbados.

A quarterly meeting of the Medico-Psychological Association of Great Britain and Ireland will be held in the new medical schools, Cambridge, on Tuesday, February 23rd, at 3 p.m., under the presidency of Dr. Charles Mercier. Dr. H. B. Donkin will introduce a discussion on the certification of mental defectives as proposed by the report of the Royal Commission on the Control of the Feeble-Minded, and Dr. William Graham will read a paper on the modern movement of psychotherapy.

Zambaco Pacha, M.D., of Constantinople, has given £600 to the French Society of Dermatology and Syphiligraphy for the foundation of a prize which is to bear his name. The prize will be awarded every two years to the author of the best work sent in dealing with a subject in the domain of dermatology or venereal diseases. The competition is open to all nationalities, but the essays must be written in French. The first award will be made in April, 1911. The essays must be in the hands of the general secretary on or before November 30th, 1910.

The eleventh International Congress of Ophthalmology will be held at Naples in April next (2nd to 7th). We are asked to state that an effort is being made to arrange special terms for travelling expenses and hotel accommodation for those who may wish to attend the Congress. It is proposed to issue for perusal before the meeting the communications offered for discussion at Naples. These will be sent only to those who have signified their intention to be present, and have paid the congress subscription (25 francs for members, 10 francs for each accompanying member of a family). To facilitate these arrangements it is most desirable that those who wish to attend should make the earliest possible intimation to one of the corresponding members for Great Britain and Ireland—Mr. Walter H. Jessop, 73, Harley Street, London, W.; Dr. George Mackay, 20, Drumsheugh Gardans, Edinburgh; or Sir Henry Swanzy, 23, Merrion Square, Dublin.

On February 3rd, at a meeting held at the Warneford Hospital, Leamington, Dr. Thursfield was presented with his portrait in oils by his colleagues on the staff and committee and other friends. The presentation was made by the Chairman of the Hospital Committee (Major Chesshyre Molyneux), who said that Dr. Thursfield was elected Honorary Physician in 1882 at the time when the hospital consisted simply of the old building and had no ground except that upon which it actually stood. Owing in a very great measure to Dr. Thursfield's energy, four new wards and a nurses' home had been built, while the hospital had acquired three acres of land giving plenty of light and air. In addition, Mrs. Thursfield had generously furnished and equipped two of the wards at her own expense. The portrait represents Dr. Thursfield in an M.D. gown, and is considered an excellent likeness.

The London County Council at its meeting on February 2nd approved arrangements which the Education Committee have made with the Queen Victoria's Jubilee Institute of Nurses for the treatment in their own homes of children suffering from suppurating ears. It has been found in many cases that the usual treatment by syringing, requiring as it does time, care, and patience, is not carried out properly by the parents. A card will be sent to parents whose children are found by the school doctor to be suffering from the affection, telling them that a nurse will attend at the house and administer treatment after the child has been seen by a medical practitioner. On the back of the card is an order to be signed by the doctor requesting the nurse to "syringe the ears of the child twice daily for the next three weeks, using only warm boracic acid lotion, and afterwards drying out and insufflating a very little dry boracic powder." After thus arranging the doctor's prescription for him, the Council nevertheless adds: "It is to be distinctly understood that the nurse, if she attends your child, will act under the instructions of the doctor of the hospital authorities as the case may be, and that the London County Council will accept no responsibility for the treatment prescribed or given."

The third meeting of the Departmental Committee appointed by the Lord President of the Council to consider the working of the Midwives Act was held at the Privy Council Office on Thursday, February 4th. Mr. Almeric FitzRoy, C.V.O., was in the chair, and Miss Bertha M. Broadwood, Honorary Secretary and Director of the Cottage Benefit Nursing Association, and Miss Rosalind Paget, Honorary Treasurer of the Incorporated Midwives Institute, gave evidence on behalf of their respective institutions.

Dr. Benjafield is medical officer of health for the district of Glenorchy, in Tasmania, and his little pamphlet, *Health in the Orchard*, draws an idyllic picture of the place that may well tempt those who seek the simple life. Glenorchy, we are told, is a tract of land some 10 miles square, "dotted all over with cultivated gardens and orchards." There people "spend all day in the sunshine, pruning in winter, digging and ploughing in spring, weeding and spraying in big apple and pear orchards, picking small fruits in the early summer, and later on the hard fruits as they come in." No wonder many of them are still young at 85, and their death-rate is only 4 per 1,000. Incidentally, the Tasmanians are trying to place more of their fruit, and especially their pears, on the home market, and it is gratifying to learn that Dr. Benjafield has been a pioneer, not only in pear culture, but in solving the many problems connected with the packing and shipping of this delicate fruit. We hope to meet Dr. Benjafield's pears at many an English dessert in the near future.

At a recent meeting of the Child Study Society, when the chair was taken by Mr. C. Montague Barlow, LL.D., member of the London County Council Education Committee, a discussion on the report of the Royal Commission on the Care and Control of the Feeble-minded was opened by Dr. Shuttleworth, who, while recognizing the extraordinary industry of the Royal Commissioners, ventured to criticize some of their recommendations. In the first place, he doubted whether it was advisable to "tar with the same brush" the adult lunatic and the simply abnormal—perhaps only subnormal—child, as was contemplated in Recommendation III (British Medical Journal, 1908, vol. ii, p. 416), which proposed that all persons of unsound mind, whether lunatic or idiot, as well as the "feeble-minded," should be legally included in the term "mentally defective," thus abolishing the distinction between mental derangement and original mental deficiency, which has important administrative as well as scientific bearings. He thought also that a too rigid requirement of notification and registration of young children found unfit for ordinary education, though capable of benefiting by special instruction, would defeat its own end by wounding the susceptibilities of parents and tend to prevent those of the well-to-do classes especially from seeking for such children appropriate training. Mrs. Burgwin, Superintendent of Special Instruction, London County Council, referred to the difficulty of exact and early diagnosis in the case of many younger children and to the disadvantage of divorcing from the scheme of elementary education, and transferring to an authority controlling adult lunacy the care of children of school age, whatever might be desirable after that age. Dr. Ettie Sayer, Assistant Medical Officer (Education), London County Council, urged that parental susceptibilities must be subordinated to the general social weal. Dr. Caldecott, Medical Superintendent, Earlswood Asylum, discussed the recommendations from the institution point of view, urging that it would be retrogressive legislation to confuse and confound with lunatics the class of mentally defectives in whose interest the so-called "Idiots Act" of 1886 had been obtained. Dr. Kerr, Chief Medical Officer (Education), London County Council, criticized the proposals to remove from the purview of the Board of Education and the local education authority all the abnormal children found in schools; he thought it would be both imprudent and impracticable; and Dr. Crowley, Medical Superintendent to the Bradford Education Authority, hoped that it might be arranged for the present special schools to continue their work under the education authorities by way of contract with the new Committees for the Care of Mentally Defectives, as contemplated in Recommendation XLII. Mr. J. J. C. Turner, Secretary and Superintendent of the Eastern Counties Asylum for Imbeciles, trusted that a way would be found to utilize the existing charitable institutions which had been doing good service for so many years. The Chairman briefly summed up, and after the usual votes of thanks the meeting dispersed.

British Medical Journal.

SATURDAY, FEBRUARY 13TH, 1909.

THE CENTENARY OF CHARLES DARWIN.

AT the present day the counsel, "Let us praise famous men," is in little danger of being forgotten, for the centenaries of great men's birth and those of their death, sometimes of the publication of a particular work, are made the occasion of commemorative oratory and celebrations of one kind or another. There is an inborn tendency in the human mind to ceremonial cult. Formerly each of the saints had his proper festival; in our modern calendar their places have been taken by the warrior, the statesman, the poet, the author, the inventor, the explorer, and the man of science.

This week it is the turn of Charles Darwin, who was born on February 12th, 1809. Darwin is of special interest to medical men, not only because he built a monument of scientific research more lasting than brass, but because he came of a medical stock and was himself intended for the medical profession. His father was a physician at Shrewsbury who was admitted by professional rivals to have the gift of prognosis to which Hippocrates rightly attached such importance. He was a man of great sagacity, strongly opposed to bleeding in the days when surgeries on certain days were like shambles, and who long before typhoid fever was recognized as a distinct disease told his famous son that two utterly distinct kinds of illness were confounded under the name of "typhus fever." He was vehement against drinking, and himself never drank a drop of alcoholic fluid. He had also much of that worldly wisdom without which scientific knowledge does not generally lead to success in medical practice. Charles Darwin's grandfather, Erasmus Darwin, author of *Zoonomia*, was also a physician, and was widely known in his own day as a poet and a botanist, characters which he attempted to combine in his *Loves of the Plants*, ridiculed by Canning in the *Loves of the Triangles*. Charles's brother, Erasmus, one of the few people of whom Carlyle speaks well, took a medical degree, but never practised.

Charles, like his brother, was educated at Shrewsbury under Dr. Butler. The training given there at that time being strictly classical, the school was, he says, to him simply a blank. So little promise of future greatness did he show at this time that his father once said to him, "You care for nothing but "shooting, dogs, and rat-catching, and you will be a "disgrace to yourself and all your family." Even then, however, he was fond of science and literature. He used to sit for hours reading the historical plays of Shakespeare; he read also Thomson's *Seasons*, and Byron and Scott. In after-life, to his own regret, he wholly lost all pleasure from poetry of any kind, including Shakespeare. The imaginative faculty had become atrophied from his overwhelming interest in facts. He worked with his brother at chemistry out of school hours, and was nicknamed "Gas" in consequence. He was once publicly rebuked by the head master for wasting his time in such useless subjects; to quote his own words: "He (Dr. Butler) called "me, very unjustly, a pococurante, and as I did not "understand what it meant, it seemed to me a fearful "reproach."

As he was doing no good at school his father sent him in 1825 to Edinburgh University, where he stayed with his brother two years. He was sent there to study medicine. He says with much frankness: "But "soon after this period I became convinced from "various small circumstances that my father would "leave me property enough to subsist on with some "comfort, though I never imagined I should be so "rich a man as I am; but my belief was suffi-"cient to check any strenuous effort to learn "medicine." He says the instruction at Edinburgh in those days was altogether by lectures, and these were intolerably dull, with the exception of those on chemistry by Hope. Darwin makes the interesting incidental remark that to his mind there are no advantages and many disadvantages in lectures as compared with reading. Dr. Duncan's lectures on materia medica he describes as "something fearful to "remember," but the fact that they were delivered at 8 o'clock on winter mornings may have had something to do with this unpleasant recollection. The lectures on anatomy, too, he found not only dull, but disgusting. In regard to this he says, "It has proved one "of the greatest evils in my life that I was not urged "to practise dissection, for I should soon have got "over my disgust; and the practice would have been "invaluable for all my future work." Darwin also attended regularly the clinical wards in the hospital. Some of the cases distressed him a good deal, and vivid pictures of some of them remained in his mind. But the hospital work did not interest him much, though he had previously felt a keen interest in clinical work among poor people at Shrewsbury. He attended on two occasions the operating theatre at Edinburgh and saw two very bad operations, one on a child, but he rushed away before they were completed. He never attended again, and he says that hardly any inducement would have been strong enough to make him do so. This, he adds, was long before "the blessed days of chloroform."

Clearly he had no vocation for medicine; on the other hand, he was interested in natural history, and made friends among men who cultivated that branch of knowledge. He was well acquainted with Grant, afterwards Professor at University College, London. One day, when they were walking together, Grant burst forth in high admiration of Lamarck and his views on evolution. Darwin listened in silent astonishment, but Grant's eloquence produced no effect on his mind. He had previously read his grandfather's *Zoonomia*, in which similar views are maintained, but they had no effect on him. Nevertheless, he says, it is probable that the hearing of such views rather early in life maintained and praised favoured his upholding them under a different form in his *Origin of Species*. He was a member of the Royal Medical Society, but, as he bluntly puts it, "much rubbish was talked there."

The idea of his becoming a doctor was given up, and he was sent to Cambridge with the intention of entering the Church. The intention, he says, was never formally given up, but died a natural death when on leaving Cambridge he joined the *Beagle* as naturalist. At Cambridge he says his time was wasted. He got a pass degree without difficulty. He continued to collect minerals with much zeal, but, as he says, quite unscientifically, and he was interested in insects, and in

the habits of birds. From Henslow he acquired a taste for botany, and he must have had some reputation for scientific knowledge among his contemporaries, for one of them who saw him at work with his beetles predicted that he would one day be a Fellow of the Royal Society, a notion which he says seemed to him preposterous. His friendship with Henslow was the turning-point of Darwin's career, for it was on his recommendation that he accepted Captain Fitzroy's offer to go as volunteer naturalist on the famous cruise of the *Beagle*.

Here we must leave him, for the vast work he did in science, though it had indirectly a great influence on the development of medicine, was done in the wide field of general biology. It can scarcely be claimed that his study of medicine did much for his intellectual development in that direction. His aptitude for science was doubtless largely inherited. One cannot avoid the reflection, which has a far wider application than to this particular case, that Charles Darwin could not have accomplished what he did had it been necessary for him to work for his daily bread.

FRIENDLY SOCIETIES AND THE MEDICAL PROFESSION.

THE conference convened by the Charity Organization Society, a full report of which will be found in the SUPPLEMENT, will have served a useful purpose if it induces the leaders of the chief friendly societies to make a serious attempt to meet the objections which the medical profession has advanced to the present system under which these societies provide medical assistance for their members. The conference was attended by, amongst others, representatives of the British Medical Association and of many of its Divisions, and by some of the leading officials of the chief friendly societies.

The moderation of the address with which Dr. James Pearse opened the discussion was recognized by subsequent speakers on the other side. He struck the right note at the beginning by saying that the relations between friendly societies and the medical profession should be cordial, since one of the main objects of friendly societies was the assistance of their members in sickness, while that of the medical profession was the alleviation of sickness. He asserted, as we believe with complete justice, that the medical profession does not object to the principle that friendly societies are entitled to provide for medical attendance on their members in sickness; it objects to the way in which the principle is acted upon, alleging that it is neither fair nor reasonable. Basing himself on a recent actuarial report made for the Manchester Unity of Oddfellows, he showed that the remuneration actually paid by that friendly society for medical attendance to members while actually drawing sick pay worked out at 2s. per sick week, and this calculation does not include the large number of members who consult a medical man for minor ailments without going on the sick-list. The main conclusions of his paper were that the fee paid bore no relation to the work done; that the system was intended to apply only to men in the receipt of ordinary workmen's wages, and not to well-to-do persons and employers of labour; and that women and children were to be included in medical benefits, the payments made by them, or on their behalf, must be adjusted so as to afford remuneration bearing a reasonable proportion to the medical services rendered.

The speakers representing the friendly societies protested that the statement that members of those societies who were so fortunate as to attain to affluence still took advantage of the medical benefits gave a false impression. While admitting that such cases might occur, they asserted that they were altogether exceptional; but it was once more asserted with some vehemence that the friendly societies would not even consider any suggestion for fixing a wage-limit. Upon this point there may be, we think, some misapprehension, and to illustrate what is meant we will go back to the very complete report on the economic conditions of contract medical practice issued by the Medico-Political Committee of the British Medical Association in 1905. That report contained a mass of information upon contract practice in all its forms, but if attention be confined to the chief friendly societies, which compose the most widely-distributed, and perhaps the most numerous, group of organizations connected with contract medical practice, it will be found that their objects are primarily the insurance of working men earning weekly wages against sickness, loss of employment, and loss of tools. The insurance against sickness was primarily an insurance against loss of wages during sickness; the provision of medical attendance in addition was a natural development of the principle, but, though very general, it is not universal.

Friendly societies, or at any rate many of the most important, including the Oddfellows and Foresters, consist of affiliated bodies in which the local branches have a large measure of independence, although subject to general rules made by annual conferences of delegates, and controlled in certain respects by a central executive. The terms of appointment and remuneration of medical officers are matters within the discretion of the local branches, though the question of remuneration may be influenced by the general rules of the Order relating to the management fund, since medical officers are in many instances paid out of it. It would appear that the possibility of the exclusion of certain members from medical benefits—a point raised by the suggestion to impose a wage limit—would depend on the general rules of the Order. In the report from which we quote, it was stated that what is commonly called the abuse of clubs is perhaps more prevalent and more difficult to remedy in the friendly societies than in any other kind of organization for giving medical attendance to the working classes, and that the main source of this difficulty was that the provision of medical attendance is not their primary object. At previous discussions with representatives of friendly societies two objections to the institution of a wage limit have always been made, and they were repeated at the meeting last Saturday. These are, first, that the friendly societies will not permit the medical profession to dictate who shall and who shall not be admitted to ordinary membership; and, secondly, that a friendly society cannot constitutionally exclude any member from any benefit which the society offers. With regard to the former of these objections, the only reply that need be made is that no such claim has ever been made on behalf of the medical profession; but the medical profession is equally determined to resist dictation and to retain its independence, and it is clearly to the interest of the community, including the members of friendly societies that it should. With regard to the second point, the Medico-Political Committee ascertained in the

course of its inquiry that in many districts the friendly societies do not provide medical attendance, the contribution for medical attendance being optional. Moreover, those friendly societies governed by a central committee, of which the Hearts of Oak may be taken as the type, do not provide medical attendance. It would therefore seem, as the Committee pointed out, that an extension of the distinction between medical and other benefits already to some extent recognized by the friendly societies, would open a way to the solution of the wage-limit problem.

We are glad to believe that one result of the conference is to afford a prospect that the National Conference of Friendly Societies will be disposed to resume the consideration of the subject and to suggest a discussion. Good may be expected to result if the representatives of the friendly societies recognize that the medical officers of these societies have legitimate cause of complaint, and that it is to the interest of the societies themselves to remove them. Sir Thomas Barlow said that if the friendly societies looked only to driving the hardest pecuniary bargain they could with their medical officers, they would not get the kind of service to which their members were entitled. This is true, and Dr. Pearse is not the only medical man who has given up club practice, not without reluctance, because he felt that the conditions were onerous and unsatisfactory. It may be gathered from several of the speeches made at the conference last week that the leaders of the friendly societies are now willing to admit that reform is desirable. On the other side, we can confidently assert that there is no desire to hamper friendly societies in encouraging their members to make provision for sickness, but that medical men to-day will be found no less willing than their predecessors in the past to do all that is in their power, on a basis just and equitable to both parties, to further so desirable an object.

PROFESSIONAL TITLES.

ALTHOUGH the Poisons and Pharmacy Act, 1908, passed during the last session of Parliament, does not directly affect the medical profession, it nevertheless has some bearing upon a point very vital to its interests—namely, the use of titles implying professional qualifications. The Act is of the nature of a compromise between the views of those on the one side who hold, and as we think rightly hold, that inasmuch as a corporate body cannot go through a curriculum, pass examinations and receive a qualification, it should not be allowed to use the titles conferred upon persons who have done so; and the views of those on the other side who hold that companies carrying on the business of chemists should be allowed to use certain titles without restraint.

Whilst the representative bodies of the chemists were anxious to restrict the use of their descriptive titles to those who really possessed them, there already stood upon the Statute Book a proviso which, to a certain extent, weakened their position; this, commonly known as the "widows' clause," was intended to preserve to the widow of a deceased chemist the fullest interest in her husband's business by enabling her or an executor or trustee to carry it on. Although it was necessary that a qualified assistant should be employed, yet the responsible proprietor might be unqualified, and the qualified assistant personally not known to the general public by name. This privilege accorded to the widow, executor or trustee, a majority of the chemists were unwilling to give up, and the principle of possible lay proprietorship once admitted, it became more difficult to withstand the claim of the companies to assume the style of pharmaceutical chemists or what not. What has been gained in the new Act—and it is a substantial gain—is that companies trading as chemists must employ a superintendent who is duly qualified and registered, and who is not similarly employed by any other company or firm, and further that on any premises where this superintendent does not personally conduct the business there must be a duly registered chemist whose name and certificate of qualification must be conspicuously exhibited on such premises. These requirements are absolute, but, if they be observed, it is competent for a company to use the description of chemists and druggists, or of dispensing chemists and druggists, provided that the superintendent before alluded to is a member of the board of directors, or of the firm or partnership. It is true that the title of pharmaceutical chemist is not conceded to a company, but the public will hardly draw the fine distinction between "dispensing chemist and druggist" and "pharmaceutical chemist." Broadly speaking, then, while the operations of companies and partnerships are brought under regulation, the use of some titles which hitherto implied personal qualification has been conceded to bodies corporate in which there need be but one qualified person.

Medical and dental companies constituted on similar lines, namely, with one qualified person on the list, have from time to time been brought to notice, and care must be taken lest this new departure with regard to chemists be not taken as affording a precedent for any similar weakening of the meaning of the professional titles of medical men or dentists. We have no "widows' clause" to hamper our position in this matter, and so long as the only effective restraint on unqualified practice lies solely in the direction of a prohibition of the assumption of medical or dental titles by the unqualified, the full meaning of those titles must be preserved in all its integrity.

The whole issue is another example of the inefficiency of medical legislation in this country, which deals with words and not deeds, and necessitates jealously safeguarding titles and descriptions with a care which to the outside public may appear exaggerated.

THE EMMANUEL MOVEMENT.

IN the JOURNAL of February 6th, page 360, it was stated that every neurologist of standing in Boston had condemned the Emmanuel movement, but that, nevertheless, the clerical healers had continued their ministrations, dispensing with medical direction. Events move so fast that it is not easy to keep up with them. From a letter published in the *Boston Medical and Surgical Journal* of January 21st, which came into our hands almost immediately after our last issue had gone to press, it appears that a medical advisory board had in the meantime been formed. The members of this board are Drs. Joel E. Goldthwait, James G. Mumford, Richard C. Cabot, and Joseph H. Pratt. These gentlemen state that they believe the Emmanuel movement to be sound in its fundamental principle, which

is that the effective co-operation of physician and minister is of value to many sick persons. Assuming that the sick person has faith in religion—the precise theological shade is immaterial—that statement is so trite as to be a truism. The members of the medical advisory board go on to admit that mistakes have been made, and that "methods which seemed "adequate at an early stage of the work now need to "be improved, and in particular a closer relation "between the physician and the clergyman is "desirable." In order to preserve and extend the co-operation between the two, the following rules have, they say, recently been adopted by the Emmanuel clergy: "(1) No person shall be received for treat-"ment unless with the approval of, and having been "thoroughly examined by, his family physician, whose "report of the examination shall be filed with the "minister's records. (2) No patient shall be referred "for diagnosis or treatment to any specialist or "assistant save with the advice and consent of the "patient's own physician. (3) All patients who are "not under the care of a physician must choose one, "and put themselves in his care before they can "receive instruction at Emmanuel Church. To "those who ask for advice in this choice there "shall be handed a printed alphabetical list of "all the general practitioners (internists) attached to "the visiting and out-patient staffs of the Boston City "Hospital, the Carney Hospital, the Homoeopathic and "the Massachusetts General Hospital." From this, or from any other source which the patient may prefer, a physician is to be selected. It rests wholly with the physicians, and not with the Emmanuel clergy, to decide whether a patient shall be referred to a neurologist or other specialist, and which cases, if any, are suitable for treatment by moral and religious education at Emmanuel. "The advisory board," it is stated, "is concerned solely with advice and counsel "regarding the manner of conducting the work, and "in no sense with the examination, control or treat-"ment of individual patients." The well-meaning physicians who formed the advisory medical board, however, appear very quickly to have been awakened to the fact that their position was open to misunderstanding, for in the following issue of our Boston contemporary (January 28th) we find them explaining that they do not approve of the Rev. Dr. Worcester's treating any one who is not actually and constantly the patient of some physician. They state that "the "physician must be in control throughout." They add that they do not think this full medical control has been obtained heretofore, and that "in this "respect" they disapprove of much that has been done at Emmanuel and wish to change it. They have thought it expedient to substitute the following for the third of the rules above printed: "No "person shall be accepted for advice by the clergy "except on the recommendation of and in co-opera-"tion with a responsible physician. In case the "clergyman's opinion is asked regarding the choice "of a physician, the inquirer shall be referred to "the annual reports of the principal hospitals "of this city. The physicians whose names "appear in these reports will, of course, not be "regarded as responsible for or in any way con-"nected with Emmanuel, whether they may have "said 'Yes' or 'No' in answer to the question which "we asked them in our personal letter regarding fees." They conclude by saying that the Rev. Dr. Worcester realizes the wisdom of discontinuing any semblance of a clinic. "To emphasize this he has discontinued "all medical examinations at the church and abolished "the former medical staff. He does not intend to "treat disease. He simply stands ready to assist in "the moral and spiritual re-education of any person "whom a physician asks him to see." These, as Mr. Peter Teazle would say, are noble sentiments. But we confess we are somewhat doubtful how long it may be before the worthy divine is driven by the unreasoning faith of patients, and perhaps a little by his own belief in his healing mission, to go back to the ways he has, evidently in deference to a strongly-pronounced professional opinion, been induced to abandon. In saying this we do not wish to be understood as hinting a doubt as to his perfect good faith. But the gift, real or supposed, of healing the spirit is sometimes dangerous to the possessor, and experience has shown that it very easily leads him to look upon the soul's tenement of clay as being an appanage of his spiritual kingdom.

DIFFICULTIES UNDER THE MIDWIVES ACT.

THE measures hitherto adopted to secure smooth and satisfactory working for the Midwives Act, 1902, cannot be said to have been successful. The rules and regulations of the Central Midwives Board (appointed under the Act) require for their effective operation the support of registered medical practitioners; no serious attempt was made in the first place to ensure such support. The midwife is compelled to advise that the assistance of a medical practitioner must be obtained in all cases of difficulty and urgency. A midwife who disregards this rule is liable to have her name removed from the roll of midwives. Such a regulation takes away the discretionary power of the patient or of those immediately concerned, and leaves no alternative, without serious possible consequences, but the acceptance of the midwife's advice. The real responsibility of the registered midwife ceases when she has taken steps to give effect to the rule requiring her to seek medical assistance. It does not appear to have been thought necessary by the State to make provision for the final and essential step in this stringent regulation. Difficulties were soon encountered in consequence of this omission. Midwives found it was not always easy or possible to obtain medical help under these circumstances. After considering numerous complaints arising in this manner, the authorities concerned appealed to the Local Government Board to help in the solution of the difficulty. A circular was then addressed by the Board in February, 1908, to local authorities asking them to draw up regulations calculated to secure for the people the advantages sought by the Act in a manner satisfactory to the members of the medical profession. In response to this appeal some boards of guardians have issued regulations and accepted some measure of responsibility. This step does not appear to have removed the difficulty; indeed, in some instances it has accentuated the point of grievance. In a case at Halifax recently reported in the local press the method has failed. The guardians sent out a circular to medical men and the midwives, and placed in the hands of midwives forms for securing medical attendance which, to the lay mind, have all the appearance of orders. The guardians expressed their willingness to pay in the case of poor persons, but declined to pay the doctor in cases in which they think the patient is able to pay, leaving the doctor to struggle for his remuneration. The Halifax Division of the British Medical Association, after carefully considering the circular issued by the board of guardians, resolved to advise members not to act under the local regulations after a certain date unless the guardians were willing to modify their circular in regard to the clause

dealing with the remuneration of medical men summoned in urgent cases on the messages from midwives. This resolution was forwarded to the guardians, who agreed to receive a deputation from the Division on the subject. Nothing came of it. The guardians appeared to think they have exerted their powers to the full extent, or, at any rate, appeared unwilling to go further, declining to give a guarantee that the practitioner called to the assistance of a midwife should be remunerated by the local authority except in the case of poor persons. This, in the view of the Halifax Division, did not carry the matter beyond the scope of the powers of the guardians under the existing Poor-law Acts. A large and representative meeting of the Division held recently, unanimously resolved to reaffirm the previous resolution, to the effect that all members of the Division be advised not to act under the regulations of the guardians as they at present exist after March 31st, 1909. Neither the guardians nor the local Division can be said to be wholly to blame for this unsatisfactory result. It should not be left to local authorities, liable to be influenced by considerations wholly or in part irrelevant to the issue, to decide and regulate essential principles affecting the administration of important Acts. It is undesirable that matters of this kind should be the subject of local discussion often attended by misunderstandings and friction which ought not to exist between medical men and public bodies. The subject is one of the points referred to the Departmental Committee at present engaged in considering the working of the Midwives Act, and as a result of its deliberations and recommendations the present difficulties may be overcome by the establishment of some satisfactory scheme applicable uniformly throughout the country. The fact that a Departmental Committee has been found necessary, with this matter as one of its principal terms of reference, should diminish the annoyance felt in places where difficulties have arisen. The effect of the combined action of the profession in Halifax is an assertion of the principle that the medical man is a free agent, at liberty to attend on call of a midwife if he is able and willing to do so, as before the issue of the local regulations, and in cases where there is reasonable uncertainty as to the remuneration to refer such cases to the relieving officers.

UNQUALIFIED PRACTICE AND SECRET REMEDIES IN GERMANY.

THE German Government has introduced a bill to regulate the practice of healing by unqualified persons and to limit the trade in secret remedies. While not absolutely prohibiting unqualified practice, the bill proposes to penalize the treatment of either men or animals at a distance—that is, without examination—and also the treatment of human beings for gonorrhoea, chancre, or syphilis; the use of any general anaesthetic remedy; and treatment by hypnosis or by mystical processes (*mystischen Verfahrens*). While the bill does not actually forbid the treatment of infectious or notifiable diseases, this may be prohibited under certain circumstances by police ordinance. Every unqualified person practising the art of healing as a trade will be required to notify himself to the police, giving particulars of his education and character. He will have to keep trade books, and must not treat patients at a distance, and under certain circumstances he may be forbidden to practise. The Imperial Board of Health will have discretionary power to limit the trade in certain means or materials for preventing, mitigating, or curing diseases or injuries of men or animals. The bill proposes to forbid the publication of misleading advertisements relating to the treatment of disease, of advertisements offering to treat disease by letter, or advertisements of remedies for sexual disorders, for the relief of sexual weakness, or the prevention or removal of pregnancy, and of all secret remedies. Professor Rumpf of Bonn has suggested[1] certain amendments which he regards as necessary. He urges the inclusion of all infectious and notifiable diseases in the prohibited list, as it is in the interest of the public health that these should be recognized and brought to the notice of the authorities without delay. Further, he would include unqualified practitioners in midwifery among those to be brought under the scope of the law. He would make it incumbent upon all unqualified persons having places of business in more than one police area to notify in each, and he would make it penal for such unqualified persons to advertise or publicly announce their tolerance by the police by the word "licensed" (*Koncessioniert*). He thinks their books should be open to the inspection of the medical officer of health for the district, and should contain the name of each patient, his complaint, the diagnosis, and prescription. He wishes the words "its consequences" to be added after syphilis, and he desires to include words which will prohibit the advertising or puffing of quacks who may live outside the jurisdiction of the German courts. He would further penalize the advertisements of any means or remedies "for curing or removing "obstructions" (*Stoerungen*). The bill proposes to forbid the advertisement of any secret remedies except in trade journals, such journals to be scheduled by the Commissioners of the Imperial Council, and to this Professor Rumpf would add words prohibiting "can-"vassing of the public by agents." The penalties contemplated by the bill for a breach of this law are six months' imprisonment and a fine of 1,500 marks (£75), or either. We trust the German Government will succeed in passing this bill. Even without Professor Rumpf's amendments it promises to be an effective means of preventing the trade in secret medicines, and will do much to restrict the operations of the rogues who thrive on the weakness and fears of those who put themselves in their power by consulting them. The need for such legislation is not less obvious in Great Britain, and public opinion here cannot fail to be influenced by the fact that Germany, after the experience of forty-five years of free trade in medicine, has recognized that such a state of things is injurious to the commonweal and needs legislative regulation.

THE SCHÄFER METHOD FOR RESTORING ANIMATION IN THE APPARENTLY DROWNED.

SOME months ago the Chief Surgeon of the Metropolitan Police applied to the Royal Society of Medicine for an expression of opinion as to the best method for restoring animation in the apparently drowned, and a committee appointed to prepare a report decided in favour of the "Schäfer" method.[2] They recommended its adoption to the exclusion of all other methods, because it is simple, available under a variety of circumstances, and can be carried out by a single person, while the directions are "incapable of being misunderstood."[3] As a consequence of this report a broadside of Instructions has now been issued by the police; it contains

[1] *Soziale Medizin und Hygiène*, 1909, p. 20.

[2] BRITISH MEDICAL JOURNAL, 1905, vol. ii, p. 1405; *Med. Chir. Trans.*, 1904, vol. lxxxvii, p. 609.

[3] *Proc. Roy. Soc. Med.*, vol. ii, No. I, p. 6.

reproductions of four good photographs illustrating the two movements, and it may fairly be said that it would be difficult for anybody to misunderstand the directions. "With the arms extended" is perhaps not quite clear; "stretched out in front of the head" would have been a better phrase for the uninitiated, but then there are the figures to help. It is to be noted that Professor Schäfer's recommendation to "place a "thick folded garment beneath the chest and epigas- "trium" has been omitted, probably in the interests of simplicity and to avoid a second of wasted time, but it is almost a pity, especially as the operator, if he knows what awaits him in the way of physical work, will certainly throw off his coat before beginning. "When natural respiration has commenced, the "patient should be allowed to lie in a natural "position on one side," say the instructions. It would surely not have involved any sacrifice of lucidity to embody the recommendation of the committee to place the patient on the *right* side. The liver is extremely congested, and the heart recovering from over-distension, and the left lung rids itself more readily than the right of water and mucus. Other points that render the method preferable to that of Sylvester are the prone position, which allows water and mucus to run out of the mouth, and keeps the tongue forward; upward pressure of the diaphragm exerts a stimulating action on the heart; "expiration" or compression is a better stimulus to the respiratory centre than expansion; and finally, though this is doubtful, more air can be exchanged per minute. Any one who has had to perform artificial respiration on a big, heavy, or muscular man for more than a very few minutes knows that the effort becomes very exhausting, and that the efficiency of the Sylvester expansion movements rapidly diminishes so soon as the operator is tired. Where only one person is available there is no doubt that a method which takes mechanical advantage of body weight rather than muscular effort has an advantage outweighing minor theoretical superiorities; and if, as appears probable, theoretical precision is combined with the greater simplicity of the new method, it is to the advantage of the public for the police, following the lead of the Royal Life-saving Society, to adopt it.

VIVISECTION AND THE POOR.

THE antivivisectionists have had the flash light of truth turned on them of late so steadily that it is no wonder they have shown signs of discomfort under the exposure. Their wailings in the newspapers are not worth serious notice, but are amusing as they are so obviously the appeals of rival showmen. Their object is so plain and their controversial methods are worn so thin by constant use that all but a few fanatics must agree with Mr. Stephen Paget when he said, at the inaugural meeting of the Dublin Branch of the Research Defence Society, that sensible people are sick unto death of them and their stale stock of calumnies which they persist in offering to an indifferent public. Not even theological controversies which have grown musty and out of date are so wearisome as antivivisectionist literature. One may read feet or yards of the effusions of Mr. Stephen Coleridge, Miss Beatrice Kidd, Dr. Hadwen and the other scribes who have adopted as a profession the systematic vilification of men who give their lives to the enlargement of the boundaries of knowledge for the good of their kind, without finding a new point, a new fallacy, or even a new lie. One should therefore perhaps be thankful to the Secretary of the London and Provincial Antivivisection Society for putting forward something which strikes us as novel. As it is particularly silly, it was natural that it should come from the dullest of the many wearisome writers on the "torture" of animals in laboratories. In that illuminating medium, *Reynolds's Weekly Newspaper* (January 31st), we find Mr. Sidney Trist writing as follows: "The vivisectors allege that experiments on "animals are useful but not conclusive until tested on "man. Who is the final test tube? The vivi- "sector, or those well-to-do persons who are likely "to be profitable patients? By no means. The "absolute test in all these matters is money. "The man who is likely to physically benefit, "if it is possible, from vivisection, is the wealthy "man or woman; the man who is likely to "be the final test tube—to make sure that the "experiment is a success—is the man who has least to "give and only his life to lose." In a letter about the Dublin meeting above referred to, Mr. Trist says that one of the speakers "talks nonsense." We thank the courteous Secretary of the London and Provincial Antivivisection Society for teaching us these words, which we make no scruple in applying to himself. The opposition to the dissection of the human body lasted much longer and had an infinitely stronger support than the campaign against vivisection. It was not until 1832 that the Anatomy Act was passed. In the debate on the subject the argument that the measure was for the benefit of the rich was used by some one of the same temper of mind as Mr. Sidney Trist. He was answered by Macaulay in a passage which we quote, because it applies exactly to Mr. Trist's fustian about "the "wealthy man or woman" and the "man who has least "to give and only his life to lose." On February 27th, 1832, Macaulay said in the House of Commons: "Again "as to bad surgery; this is of all evils the evil by "which the rich suffer least and the poor most. If "we could do all that in the opinion of the Member "for Preston [we do not know who he was, but he "would seem to have been an archetype of Mr. Trist] "ought to be done, if we could prevent disinterment, "if we could prevent dissection, if we could force "every student of medical science to go to the "expense of a foreign education, on whom would the "consequences fall? On the rich? Not at all. As "long as there is in France, in Italy, in Germany, a "single surgeon of eminent skill who is, to use the "phrase of the Member for Preston, addicted to "dissection, that surgeon will be in attendance when- "ever an English nobleman is to be cut for stone. "The higher orders in England will always be "able to procure the best medical assistance. "Who suffers by the bad state of the Russian "school of surgery? The Emperor Nicholas? By "no means. The whole evil falls on the peasantry. "If the fees of surgeons should consequently "rise, if the supply of regular surgeons should "diminish, the sufferers would be not the rich, but "the poor in our country villages, who would again "be left to mountebanks and barbers, old women and "charms, and quack medicines. The honourable "gentleman talks of sacrificing the interests of "humanity to the interests of science, as if this were "a question about the squaring of the circle or the "transit of Venus. This is not a mere question of "science; it is not the unprofitable exercise of an "ingenious mind; it is a question between health "and sickness, between ease and torment, between "life and death. Does the honourable gentleman "know from what cruel sufferings the improvement "of surgical science has rescued our species? I will "tell him one story, the first that comes into my "head. He may have heard of Leopold, Duke of

"Austria, the same who imprisoned our Richard "Coeur-de-Lion. Leopold's horse fell under him "and crushed his leg. The surgeons said that "the limb must be amputated, but none of them "knew how to amputate it. Leopold, in his agony, "laid a hatchet on his thigh, and ordered his servant "to strike with a mallet. The leg was cut off, and the "Duke died of the gush of blood. Such was the end "of that powerful Prince. Why, there is not now a "bricklayer who falls from a ladder in England who "cannot obtain surgical assistance infinitely superior "to that which the Sovereign of Austria could com-"mand in the twelfth century." The moral of the tale may be further pointed for the instruction of Mr. Trist and his friends by reference to the fact that since 1832 surgery has made greater advances than it had made during all the centuries of recorded time before the date of Macaulay's speech. And it is a fact, which no candid person who knows the history of its progress can deny, that the advance has been mainly due to the application of knowledge acquired by vivisection. It may be added that this advance has benefited the poor far more than the rich.

SCHOOLBOYS AND LONG RACES.

IN another column we publish a letter signed by Sir Lauder Brunton, Sir Thomas Barlow, Drs. Goodhart and Hale White, and Sir Alfred Fripp, in which the statement is made "that school and cross-country "races exceeding one mile in distance are wholly "unsuitable for boys under the age of 19, as the con-"tinued strain involved is apt to cause permanent "injury to the heart and other organs." This opinion is expressed in a letter to Mr. Herbert Farmer, an old Harrovian and Middlesex county football captain, who himself considers such races highly injurious; but we feel inclined to ask whether, if there were definite evidence of "permanent injury" to and "wreckage" of boys' lives, we should not have had an expression of opinion from the medical officers of public schools which would have prevented the continuance of the practice. A race or wrestle for sport is like a race or struggle for life. The body is spent to the utmost, the consumption of oxygen temporarily becomes greater than the supply, and lactic acid and other products of incomplete oxidation poison the heart and muscles. But the body has been evolved and is built to stand such strains in the struggle for existence; it recovers, as a rule, quickly from its temporary intoxication by fatigue products. The healthy boy is far less likely to push himself to the extreme of exhaustion than the man. The schoolboy, as a rule, is in better training than the city week-end athlete (over 19), who is handicapped by long hours of office work and indulgence in tobacco; there is a great deal of talk about the athlete's heart, but very little definite proof that permanent cardiac trouble is produced by over-indulgence in athletics *per se*. In the type of athletes who suffer from heart trouble, syphilis and indulgence in alcohol and tobacco have to be reckoned with. Disorders of cardiac action produced by excessive effort in the untrained state quiet down and entirely disappear with rest and abstention from tobacco, and leave, we believe, the heart not one whit the worse. From pathologists we can gain no definite evidence that the hearts of athletes are enlarged beyond that degree which is the natural response to the increased work required of it. The navvy and the blacksmith carry out daily for many years the severest toil, while the athlete's period of strain is usually short. We have no evidence that such toil, apart from syphilis and alcohol, causes vascular degeneration. We fail to see any reason for stopping boys running cross-country races so long as they are fit and enjoy it, and the distances are of moderate length. The practice which requires severe criticism is that of compelling all boys alike to run these races. If the boys are left to themselves only those constitutionally fit for such exercises will take to it. The others will stand aside. If compulsory games and runs are enforced, there ought to be strict medical inspection, so that none of the unfit and untrained may be compelled to do muscular work beyond their powers. The training and development of the boys' physique should be as important a part of the schoolmaster's charge as the training of mind and character. In this respect reform is urgently wanted, but we cannot see any reason for frightening all boys off cross-country runs, and setting up the idea that it is safe to indulge in such runs after 19, and not before. Boys should be taught to run, not to win or break records, but to improve their physique and increase their enjoyment of life. A return to the true spirit of sport is what is required.

THE WAR AGAINST THE MOSQUITO.

SIR PATRICK MANSON has been entertained at dinner by the Authors' Club, Mr. Percy White being in the chair. In his speech he said that in his early years of tropical experience he was in the island of Formosa, and one disease had a special fascination for him—elephantiasis. Later he went to Amoy, a large town on the coast of China, where he saw many more cases and many more forms of the disease. Still he failed to find an explanation. In 1874 he came to London, where he heard that Timothy Lewis had discovered that in the blood of a proportion of the inhabitants in certain districts of India there was to be found an organism, which he called the *Filaria sanguinis hominis*. These parasites Lewis had found in more than one instance in association with elephantiasis, or elephantoid diseases. On his return to China in 1876, Sir Patrick Manson discovered that the parasites were present in some districts in 10 per cent. of the population; in other districts they were present in 50 per cent.; while in other places they were not found at all. He described how he ultimately succeeded in tracing the filaria into the mosquito. It was now absolutely sure that certain kinds of mosquitos were the means for the transmission of the filaria of the blood, and therefore of those diseases to which that parasite gave rise. In the early Nineties he interested himself in the malaria parasite, discovered some time before by Laveran in Algiers. He felt convinced for many reasons, epidemiological as well as biological, that the insect was the intermediary of the malaria parasite. Being in England, he was unable, for want of material, to test and work upon this hypothesis. He sent a paper on the subject to the BRITISH MEDICAL JOURNAL, and the Editor said the idea seemed a good one, and asked why he did not go to work upon it himself. But to do that he would have been obliged to go to a malaria country. A sum of money was promised by the British Medical Association for this purpose, on condition that the Royal Society would give a similar amount; this, however, the society could not see its way to do. About that time he met Professor Ronald Ross, who took up the idea and worked it out to the brilliant conclusion which all the world knew. The doctrine was received by many with ridicule. But there was one man in England at that time who recognized the importance of the discovery. That was Mr. Joseph Chamberlain, then Secretary of State for the Colonies, who, when asked for a

sum of money for certain experiments, at once acceded to the request. The experiment in the Roman Campagna, with the complementary experiment in this country with infected mosquitos obtained from Italy, and the work of Professor Ross and many other scientific men, had absolutely confirmed the mosquito-malaria theory, and now, in most places where malarial fever was rife, the practical application of the theory was leading to important advances in sanitation. The discovery of the relation between mosquitos and yellow fever had rid Havana of that disease, and that discovery was enabling the Americans to construct the Panama Canal. There was proof that the tsetse fly acted in a like manner as regards the fly diseases of cattle and the fly disease—the sleeping sickness of man. They knew that a certain kind of tick was the medium by which relapsing fever was conveyed. They were fairly sure that other diseases were conveyed by bugs and lice. Doubtless the result would be practical measures which would tend to minimize the dangers of these diseases, if not to prevent them altogether. Several tropical diseases, notably malaria and yellow fever, were still geographically limited; but if precautions were not taken in time, he believed that, with the opening up of the Panama Canal and by the repeated passage of rapid steamers across the Pacific, yellow fever would be introduced into the Sandwich Islands, Manila, and to the Continent of Asia. Further, if measures were not taken to prevent the introduction of fever-carrying mosquitos into some countries hitherto free from malaria, by-and-by these countries would become exceedingly unhealthy and malarious. The moral was that discovery was of little use unless it had practical application. Damp was not the cause of disease. It was damp in the form of puddle and swamp that was so admirably suited to the mosquito. Again, it was not dirt that caused disease, but the ticks and other carriers of germs which throve in dirt. He concluded with a note of warning as to the preventable calamity which he considered was hanging over Asia and the Pacific by the probable spread of yellow fever to the former and malaria to the latter through the introduction of disease-carrying insects.

LEPROSY IN NEW SOUTH WALES.

The report for the year 1907 regarding leprosy in New South Wales has just been received. The details of the new cases have been carefully worked out with Dr. Ashburton Thompson's usual thoroughness, with the co-operation of Dr. D. Wallace, of the Coast Hospital and Lazarets. During 1907 seven persons were reported as suspected lepers, but after careful investigation only five of these were certified, of whom four were ultimately admitted. The fifth case, a Greek sailor, was, in accordance with the Immigration Restriction Act, detained on board his vessel until its departure. The other four cases were respectively a native of Lahore, who absconded, and could not be traced by the police; a woman born in Australia in 1856, her mother being a native of London and her father the son of Dutch parents it is said, but a native of Penang (the patient visited Singapore in 1877 and lived for some time in Batavia); and two Chinamen. The report gives elaborate details of the examination (surveys they are called) of the cases admitted previously to the year 1907. The value of these reports lies in the fact that they apply to a limited field and to a limited number of patients. It is really a great mistake to suppose that for the clinical study of leprosy a large number of cases is necessary. On the contrary, where numerous lepers are congregated together, investigators, who are only human, lose some of their enthusiasm, another factor in this depressed attitude being the monotony of life and climatic influences. In leprous areas, better far to study and follow up a few selected cases. This applies especially to the therapeutic aspect of this baffling complaint. Dr. Ashburton Thompson has been well advised in adding tabular statements as to the incidence of leprosy in the other States of the Commonwealth.

THE ETIOLOGY OF GOÎTRE.

Captain Robert McCarrison, M.B., B.Ch., I.M.S., communicated recently to the Royal Society the results of a research to determine, by experiment on man, whether goître was caused by matter held in suspension in goître-producing waters, and to ascertain, as far as possible, the nature of the suspended ingredient which had been surmised to be responsible for the production of the disease. The experiment was made at Gilgit, Kashmir, and the results, of course, can only be directly applied to goître as it occurs there. Thirteen individuals, including Captain McCarrison, were given suspended matter which had been removed by filtration from goître-producing water every morning before the first meal of the day. Captain McCarrison and three others developed enlargements of the thyroid gland. The experiment was repeated in the case of eight individuals who were given the same suspended matter, which had previously been boiled for ten minutes; in no case did any enlargement of the thyroid gland occur. The conclusion drawn from these results is that goître is due to a living organism of disease present in the water. The incubation period of experimentally-produced goître was thirteen to fifteen days. The suggestion is made that the organism of goître exists as an intestinal parasite in goîtrous individuals, since an intestinal antiseptic appeared to have a marked curative effect. Experiments were made on monkeys to test the possibility of the spread of the disease by the faeces of infected individuals but with negative results. Plentiful amoebic infection of the intestine was found in the majority of cases of goître examined. It is not known, however, whether amoebae have any relationship to the disease.

Dr. Sidney Martin will deliver the second Lettsomian Lecture on functional disorders of the stomach and intestines, their diagnosis from organic disease, and treatment, before the Medical Society of London, on Monday next at 9 p.m.

Dr. F. W. Mott, F.R.S., Fullerian Professor of Physiology and Pathologist to the London County Council, will deliver a course of lectures at the Royal Institution on the evolution of the brain as an organ of mind on six consecutive Tuesdays—February 23rd, March 2nd, 9th, 16th, 23rd, and 30th—at 3 p.m. In a further course of lectures Dr. Mott will deal with the structure of the human brain.

The Prince and Princess of Wales will honour the Royal College of Surgeons of England with their presence at the delivery of the Hunterian Oration by the President, Mr. Henry Morris, on Monday, February 15th. The Prince of Wales has graciously consented to become an Honorary Fellow of the College, and the Diploma of Honorary Fellowship will be presented to His Royal Highness in the presence of the Council on that day.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

LIVERPOOL.

THE MILK SUPPLY OF HOSPITALS.

SOME time ago the Liverpool Medical Institution appointed a special committee of its members to consider whether the Liverpool voluntary hospitals should be advised to take action to ensure greater purity of their milk supply with special reference to tuberculous infection, and to report thereon to the institution. The following formed the committee: Mr. T. H. Bickerton (President), Sir Rubert Boyce (Chairman), Dr. Buchanan and Dr. H. H. Clarke (Secretaries), Dr. Hope, Dr. Annett, Dr. E. E. Glynn, Dr. C. A. Hill, Dr. N. Percy Marsh, and Dr. W. B. Warrington. These names are fairly representative of the voluntary hospitals of the university and of the public health department. The report, which has recently been presented to the institution and adopted, lays emphasis on the importance of a pure milk supply, especially in the case of invalids and children, and draws attention to the fact that more than 5 per cent. of the samples of railway-borne milk were so deficient on chemical analysis that legal proceedings were taken; 5.4 per cent. contained tubercle bacilli, and 72 per cent. contained organisms commonly present in the excreta of cattle. The report states that

> Pure milk of good quality can only be obtained from healthy cows, kept clean, under good hygienic conditions, and properly fed. The milk should be rapidly cooled, and delivered as quickly as possible to the consumer, being protected from contamination during transit. Many of the best dairies at the present time are conducted under conditions favourable to the supply of pure milk, and the problem is therefore how best to insure that our voluntary hospitals be supplied only from such dairies.

In Appendix I to the report are given suggested forms of contract for the supply of pure milk, designed to secure the following conditions:

1. Systematic inspection of the farm.
2. Periodical analysis of the milk for fats, solids, and adulteration.
3. Bacteriological examination at intervals for the usual infective organisms, more especially tubercle, and for other bacterial examination.
4. Periodical application of the tuberculin test.
5. The farm and accessories to be properly equipped and kept up to an approved standard of hygienic efficiency.
6. The use of special milk cans—or churns—for transport of convenient size, rain-proof and dust-proof, and capable of being easily sealed. These to be registered, numbered, and stamped on the outside with the tare weight.

In Appendix II the value of the tuberculin test is discussed, and the opinion is expressed that it is not safe to use the milk of any tuberculous cow for human food, and that the tuberculin test is the best means at present available for detecting tuberculosis in cattle. The real objection to its use is said to arise mainly from an uneasy suspicion that tuberculosis is exceedingly prevalent amongst the cattle of Great Britain, and from a still more uncomfortable uncertainty as to the quarter on which the loss will fall if tuberculosis in cattle is to be eliminated.

A conference will shortly take place between representatives of the governors and medical boards of the voluntary hospitals and the Milk Committee with a view to giving effect to the foregoing conclusions.

VACANT POST OF MEDICAL OFFICER TO THE POLICE IN LIVERPOOL.

The Corporation of Liverpool has advertised in the local press for a medical officer to attend the members of the police force of the "B" Division, including the members of the staff departments residing within the division. The advertised salary is fixed at £60, to be increased to £80 per annum after five years' service. The "B" Division comprises about 280 men, and the members of the staff department residing in the district number about 50, so that the salary offered by the wealthy and important Corporation of Liverpool for attendance on its police constables works out at less than 4s. a head per annum. It is stated that in London and other cities the payment works out at or about 10s. a head. It is true that in Liverpool the Corporation supplies the medicines at its own expense, but, on the other hand, the medical officer has several anxious and responsible duties to perform besides the actual treatment of the sick constables. Thus, a daily report has to be made of those who go off duty through illness, and of those who are able to return to duty, and the Watch Committee may call for a special report on any constable who is off duty. Further the medical officer is required to report on cases applying for superannuation, and has to spend about two hours each month in examining recruits. It is worthy of remark that the retiring medical officer was in receipt of £100 per annum, to which sum the salary was raised from £80. The Corporation seems to think that the resignation of the medical officer is a favourable occasion to effect a paltry economy in dealing with the lives and health of the constables it employs. This is all the more remarkable at the present time when it is announced that the municipal budget for the current year will involve a very substantial increase in the rates. The rates must be borne by all alike, but the idea of the Corporation seems to be that the medical profession is to be made to pay a special contribution by the docking of the salaries of such of its members as are in the service of the Corporation.

MANCHESTER AND DISTRICT.

THE NATIONAL ASSOCIATION OF MIDWIVES.

THE National Association of Midwives at its meeting in Manchester last week discussed the omission from the Departmental Committee now considering the working of the Midwives Act of any direct representative of the midwives of the country. It was stated that it had become almost a custom in appointing such committees to add at least one representative of any interest that might be affected by the inquiry. This was quite fitting, as such representatives having practical experience of the matters to be discussed, might often be able to throw considerable light on the subjects. The association passed a resolution respectfully asking that a direct representative of the midwives might be added to the committee.

THE MANCHESTER HOSPITAL FOR SKIN DISEASES.

The remarkable increase in the number of patients treated at this hospital, largely owing to the "light" treatment, is shown by some figures given at an annual meeting of the subscribers to the hospital. In 1888 the patients treated numbered 632; in 1901 they had increased to 1,989, while last year they numbered 8,796, making 48,916 attendances during the year. The hospital has a most elaborate and complete department for treatment by Finsen light and x rays, which caused patients to be drawn from almost every part of the country. In 1902, out of over 58,000 attendances no less than 28,895 were for the "light" treatment. The contributions received from patients last year amounted to £1,131, of which £731 was from the out-patients. There was a slight decrease from private and "light" patients, and on the full year's working there was a deficiency of £656. An appeal was made for £2,500 to free the new building from debt, and also for £1,000 to place the income account on a good footing. The regular subscriptions needed increasing by something like £650. Dr. Lancashire, referring to the medical report, called attention to the great increase in the number of cases of parasitic skin diseases which the hospital had treated. He thought that if their figures could be taken as any indication of the prevalence in Manchester and Salford of that class of disease, they were worth the consideration of the medical officers of health. The cases were extremely difficult to eradicate because, even if cured by attendance at the hospital, the patients on returning home were soon reinfected, and the only real remedy was to eradicate the disease from the people's homes.

Inquiries on the subject fail to show any greater prevalence of these diseases than usual, nor does Dr. Lancashire say anything except that the hospital has treated more cases. This is undoubtedly due to the fact that health visitors, school inspectors, and teachers are making more rigid and systematic examinations of school children than formerly, and urging parents to obtain treatment. The Children's Act passed in the last session

of Parliament will enable the education authorities to deal more effectually with these cases, as the parents may be called on to cleanse the persons and clothes of the children properly within twenty-four hours after receiving notice, and failing that the medical officer may remove a child to suitable premises provided by the authorities and there detain it until it has been "properly cleansed with suitable appliances." But it is evident that even this will be of little use unless the sanitary authority most thoroughly cleanses all the bedding and clothes at the children's homes and insists on examination of all inmates of any house where an infectious case has been found. The problem is, in fact, that of not only enforcing cleanliness, but of educating the people as to the causes of these diseases. That this is no slight task is evident when it is remembered that the popular idea is that these diseases are caused only by debility and it is not at all a rare thing in the out-patient departments of the hospitals for parents to ask for a bottle of medicine to cure scabies and impetigo. It is satisfactory to know that Dr. Ritchie, the chief medical officer of the Education Committee, is fully alive to the necessity of thus educating the parents, as is shown by the circulars on infectious skin diseases recently alluded to in this column.

WEST YORKSHIRE.

The Workmen's Compensation Acts.

There is a strong feeling amongst medical men in the West Riding that in the public interests some effort should be made to obtain an amendment of these Acts. There is a great deal of malingering and consequent loss of industrial fitness amongst injured workmen. Some of this is possibly more apparent than real. Owing to the uncertainty of the law and the possibility that he may not be able to meet the medical charges, the injured person frequently does not obtain adequate treatment. He allows his case to drag along wearily month after month until he practically ceases to take any interest in attempting to recover. Probably some contributory scheme by the workmen concerned would tend to make them take a more active interest in their own recovery. In making the award there should be some provision for the payment of medical charges. The questions of workmen suffering from partial physical disability, the necessity for the more general employment of the medical referees, unanimity amongst the medical men concerned as to matters of fact, and other allied matters, all call loudly for adjustment. The Bradford Division has appointed a committee to consider these questions and make proposals to lay before the authorities. Such action taken by those who are in touch with all the difficulties connected with the question in one of the most active industrial centres in England is sure to be productive of good.

Scotland.

[From our Special Correspondents.]

Northern Infirmary, Inverness.

Some time ago we drew attention to the changes in the medical staff of the Northern Infirmary, Inverness, and pointed out that the alteration in the constitution whereby one of the staff, who had served fifteen years and should have gone on the consulting staff, had been appointed for another term of years, thus blocking the promotion of the assistant members, who naturally looked for advancement to the acting staff of the institution, did not seem to be conducive to the proper working of the infirmary.

The managers held a meeting on January 29th to consider the report of a subcommittee appointed to draft a new constitution, and, while agreeing that many of the changes are an improvement on the old regulations—such as the appointment by the managers of directors who will control all the affairs of the infirmary—the changes proposed in connexion with the medical staff are not such as will commend themselves to those who have the interests of the institution at heart. For instance, the appointment of the members of the medical staff "shall only be for one year," and they "may thereafter be reappointed annually during the pleasure of the directors." It is usual to make the appointments to the staff for five years, reappointing for further periods of five years until the holder attains the age of 60 or 65. The assistant members are in future to be appointed for three years and may therefore be appointed annually during the pleasure of the directors, but vacancies in the acting staff may be filled up by the appointment of one of the assistant members; formerly they knew that on a vacancy occurring they were sure of promotion; now, however, the directors may appoint an outside medical man to the vacancy. But a change in the constitution relating to the consulting staff is, we believe, unique in the history of hospital administration. The new rule relating to the consulting staff reads as follows: "It shall be the duty of the consulting members to attend, when possible, all consultations, and, subject to the approval of the directors, they shall have the right to operate in the infirmary. There shall be placed at the disposal of the consulting members, for patients on which they may wish to operate, such number of beds as the directors may see fit to allocate." This is an unwise rule, likely to cause friction between the members of the consulting and acting staffs. The rule as it stands is unworkable.

Proposed Extension of Aberdeen Royal Infirmary.

The directors of the Aberdeen Royal Infirmary, in their report, which has just been issued, mention that, with the generous gift of £26,758 received lately from Lord Mount Stephen, they propose to increase and improve the accommodation to enable the hospital to cope with the ever-increasing demands upon it. They propose to apply the funds:

1. In erecting, in connexion with the surgical block, three new operating theatres, each with suitable surgeon's room and anaesthetic and sterilizing rooms, one of these theatres and appurtenances being attached to and opening from each of the floors on that block.
2. In erecting on Sim's Square, on the other side of Wolmanhill from the infirmary, a building to provide suitable accommodation for the out-patient department, also suitable premises to which the dispensing rooms might be removed from their present site.
3. In reconstructing the portion of the basement of the surgical block at present occupied by the dispensing rooms, so as to provide suitable accommodation for the electrical department.
4. In improvements on the premises occupied by the gynaecological department.
5. In improvements on the premises occupied by the ophthalmic department.
6. In providing for increases and improved accommodation for the resident medical staff and for the nursing staff by utilizing the space at present occupied by the casualty and out-patient department, and in certain other minor improvements.

The block of ground known as Sim's Square, on which it is proposed to accommodate the outdoor patient department, was some years ago acquired by the Primrose Trustees, the price paid for it (£7,000) being part of the £10,000 which the trustees had resolved to set aside as a gift to the infirmary. When these additions and alterations are completed, Aberdeen will have a thoroughly equipped and up-to-date hospital. The present accommodation of the infirmary is sorely taxed, especially on the surgical side, and the generous and timely gift of Lord Mount Stephen will help the directors out of their difficulty. In a letter accompanying his munificent gift, Lord Mount Stephen says:

> I consider it would be little short of a calamity if what I have done for the hospital should have the effect of weakening the interest of the people of Aberdeen in the old infirmary in which I was a patient sixty-two years ago.

He has set a splendid example to all those who at any time in their lives benefited by hospital treatment, and who in the days of their prosperity should remember the institution which helped them in sickness and poverty.

The Glasgow Royal Infirmary.

An alarming outbreak of fire occurred on the evening of February 7th, in the front block of the Glasgow Royal Infirmary. The scene of the fire was the chapel situated on the fourth floor, and, fortunately, the damage was confined to the roof of the chapel and the dome of the building. As a precautionary measure the medical superintendent removed a number of the patients from the medical wards to another part of the building. The damage is estimated

at £1,000. The block where the fire occurred faces Cathedral Square. It was designed by Adams, and is considered to be one of the masterpieces of that famous architect. The Glasgow Royal Infirmary receives the sum of £80,000 from the estate of the late Mr. James Dick, of Glasgow, and it is reported that two other Glasgow infirmaries will receive £40,000 each.

Ireland.

[FROM OUR SPECIAL CORRESPONDENT.]

UNIVERSITY COLLEGE, CORK.

DR. J. J. CHARLES, who, for thirty-two years prior to 1907, when he resigned, had held the Chair of Anatomy and Physiology in Queen's College, Cork, has notified the authorities of University College, by which the old Queen's will in future be known, of his intention to found in perpetuity a large gold medal to be competed for in each alternate year by physiological and anatomical students. Dr. Charles's patriotism contrasts favourably with that of an Arts colleague of his who, on his death after a fifty-six years' professoriate in Queen's College, Cork, bequeathed his library and a large sum of money to a university college on the other side of the Channel.

NORTH INFIRMARY, CORK.

Dr. Charles has also intimated his desire to establish and endow a bed in the North Charitable Infirmary of the city, to perpetuate the memory of his son, Captain Godfrey E. Charles, M.B., who, after a conspicuously successful university career, entered with first place the Indian Medical Service, and was shortly afterwards appointed acting professor of anatomy in Lahore. The early death of Captain Charles on the threshold of a career of great promise caused amongst his many friends deep regret, and the sympathy of the community went out to his father in his heavy bereavement. Dr. J. J. Charles is the eldest of the brilliant sons of the late Dr. Charles of Cookstown. One of his brothers was the late Dr. T. Cranstoun Charles, who did much research work in physiological chemistry. Another of his brothers is Sir Havelock Charles, K.C.V.O., a former student of Queen's College, Cork, who entered with first place the Indian Medical Service, became Professor of Anatomy, and afterwards of Surgery, in Calcutta University, and in 1906 was appointed Physician-in-Ordinary to the Prince of Wales.

HEALTH OF BELFAST.

At the meeting of the City Council held on February 1st a remarkable fall in the mortality for the previous month was reported. In the corresponding period of last year 111 deaths from zymotic diseases had been registered; in this year 16; in last year from pneumonia 91, and in this year 61; deaths from respiratory diseases in general and from phthisis showed a much smaller decline. The deaths of 147 children under 1 year and of 178 above 60 were registered last year; only 126 and 128 respectively this year. The total death-rate from all causes was 20.2 as compared with 27.1 last year. A few cases of cerebro-spinal meningitis had occurred, and the renewal of the Notification Act for this disease was agreed to. These satisfactory figures help to explain the general absence of a "busy time" amongst medical men usual at this season of the year. The climatologists say it is the mild winter which Ireland has experienced, even when severe frost was reported in England; the temperance party say that bad trade means less drink, and less drink means better health; and the Health Committee are inclined to view the low death-rate as the result of their vigorous policy.

The Medical Officer of Health, in a report on some insanitary property, draws attention to an undoubted evil in the following terms:

> During our inspection we observed an utter absence of personal cleanliness among the inhabitants of the district.
>
> There is urgent necessity for reform among the people themselves in their habits; they seem practically ignorant of the benefits accruing from cleanliness.
>
> The conditions present to our minds a large field for moral and social reform.
>
> It has been found necessary to give 402 verbal notices for dirty houses.

DESTITUTE SICK IN BELFAST.

The eighty-second annual meeting of the Belfast Society for the Relief of the Destitute Sick, one of the oldest charitable societies in Ulster, was held at the City Hall on February 5th. The Marchioness of Londonderry presided. The society is most unostentatious, and through private information and the visiting of ladies finds out really deserving cases of destitute sickness, and gives greatly required aid. Professor Lindsay, M.D., in seconding the re-election of some members of committee, pointed out that probably one-third of the population of large towns lived in poverty, and advocated the claims of this society. Dr. Calwell seconded a vote of thanks to Lady Londonderry for presiding, and said that any society which had the imprimatur of her name could appeal without fear to the public.

Special Correspondence.

PARIS.

Professor Tuffier on the Mode of Action of Physical Agents (Radium, X Rays, and High-frequency Currents) on Cancer.—The Population in France during the First Half of 1908.—Salaries of Nurses in the Paris Hospitals.

IN his wards at the Beaujon Hospital Professor Tuffier has submitted some patients suffering from uterine cancer to treatment by radium, which was carried out by M. Dominici. It is as yet impossible to state the results, as the patients have only been observed for four months. In one case the patient suffered from an inoperable cancer; she was curetted, and radium then applied. In a month Dr. Tuffier was easily able to operate. Microscopic examination showed that the adhesions were inflammatory and not neoplastic. It was the connective tissue, sclerosed by inflammation, which was the cause of the immobility of the uterus. Another patient who had been operated on eight months previously for cancer of the uterus returned with a recurrence in the vaginal cicatrix and the foot of the broad ligament; radium caused five-sixths of the pathological infiltration to disappear, but an induration still persisted. The cancerous nature of the growth was established by microscopic examination. In the first case an apparatus consisting of a cylindrical glass ampoule containing 9 centigrams of pure radium bromide, enclosed within a silver sheath 1 millimetre thick, and then placed inside a rubber drain 2 millimetres thick, was introduced into the cancerous uterine cavity. This apparatus furnished an ultra-penetrating radiation of 16,000 to 17,000 gamma rays. In the other cases a cloth apparatus was used, A. 500,000,[1] the weight being 4 centigrams; the surface was enclosed in a lead capsule 1 millimetre thick, surrounded by a paper envelope also 1 millimetre thick. The apparatus was protected by a double envelope of thin india-rubber, and had an ultra-penetrating radiation of 3,500 to 4,000 gamma rays. It was applied every sixth day and left *in situ* for twelve hours each time. In order to judge the results obtained, sections were cut of the tissue treated by radium, and from these Dr. Tuffier draws the following conclusions, which are subject to modification:

1. The radiations penetrated to a depth of *at least* 2 cm.
2. The action of the radiations on the cancerous tissue was produced slowly; the absence of any morphological tissue modification for six or more days does not in any way imply that no action will follow later.
3. The action of the radiations was on the cancer cells and on the connective tissue framework, but not equally, for the connective tissue was the less rapidly affected, the action being first and especially an elective one on the cancer cell.

The radiation can be regulated so as to cause no alteration in normal tissues, while at the same time stopping certain inflammatory processes; it does not destroy the elements of vascular connective tissue in a state of inflammatory reaction, but modifies its nutrition. The radiation can stop the development of the cancer temporarily by modifying the evolution of the epitheliomatous cells in different ways, which M. Dominici believes to be: (1) An excitation of the chromatine and of the

[1] See BRITISH MEDICAL JOURNAL, January 23rd, p. 242.

nucleoli, followed by the death of the cells which are the most specialized from the neoplastic point of view; and (2) arrest of the cancerous evolution of the cells which are the least advanced in neoplastic transformation. Comparing these results with those produced by the *x* rays, Dr. Tuffier found that the latter were powerless in dealing with subcutaneous cancers, but in ulcerated, granulating, and bleeding tumours they exercised an incontestable haemostatic action, causing cicatrization and producing an anaesthetic effect; but the healing was superficial and left the deep cancer intact. Microscopic examination of cancers treated by *x* rays showed that their action was specific on the cancer cell, the healing action being neither in the inflammatory reaction of the tissues treated, nor in the vascular troubles or haemorrhages. There were no arterial lesions, as thrombosis, no diapedesis but an elective necrosis of the neoplastic elements. The microscope showed that their action was very limited in depth, and that often in spite of apparent cure, active neoplastic elements were found at a depth of less than 2 millimetres from the surface treated; isolated and atrophied cells were found in the most superficial portions, but active cancer cells with karyokinesis, proof of their proliferating activity in the subjacent layers. Dr. Tuffier also investigated the method of action of high-frequency currents (fulguration), which were applied by M. Keating-Hart in five cases of inoperable cancer, once alone, and in the four other cases after ablation and as complete a curetting of the neoplastic tissue as possible. The cicatrization of the wound after the detachment of the slough seemed to be more rapid than after a simple curettage, and the cutaneous cicatrix was supple and smooth. Unlike the *x* rays and radium, the sparks of high-frequency currents had *no specific action* on the cancer cell, but acted especially on the connective tissue. The results varied according to the length of time after treatment the examination was made. *Immediately after treatment*, on the healthy skin, the cells of the epidermis showed absolutely no alteration, but the superficial parts of the derma showed oedema and congestion. On an ulcerated cancerous tissue the epithelial cells were exactly similar to those which had not been fulgurated, but the connective tissue which surrounded them to a depth of 1 millimetre appeared distended by serous fluid; the protoplasm of the connective tissue cells was swollen, and numbers of white cells and a few red corpuscles were present. In sections made on the eighth day after treatment at the level of the tumour covered with skin these changes were no longer visible, save that there was perhaps sometimes a little oedema of the superficial portions of the derma; the cancer cells situated below the epidermis remained in full activity. At the level of the ulcerated or abrased portions, the connective tissue of the tumour to the depth of about 1 millimetre was markedly hypertrophied, and sections made at this level showed inflammatory tissue with hypertrophied connective tissue cells, branching and anastomosing, newly-formed blood vessels, leucocytes scattered between the cells, and fibres of newly-formed connective tissue; in the midst of this connective tissue the epithelial cells remained intact, and some few of them were in karyokinesis. At the end of fifteen days the superficial portion of the tumour, forming a layer about 1 millimetre thick, consisted of adult fibrous tissue very much hypertrophied when compared with the deep layers which had not been reached by the spark. In the midst of this fibrous tissue the neoplastic cells were as it were choked and becoming atrophied. Fulguration, therefore, although it had no elective action on the cancer cell, could, by the mechanism of inflammation, eventually destroy these cells, but its action remained localized to the superficial layers; and even when cicatrization was obtained, there were, as in the case of the *x* rays, below it a cancer in process of evolution, though more or less hindered by the sclerosed fibrous framework. To form a definite judgement Dr. Tuffier thought it would be necessary to examine the tumours or the cicatrices several months after the application of the sparks.

In a recent number of the *Journal Officiel* appeared the statistics relating to the population in France during the first six months of 1908, compared with the same period in 1907. Heretofore these statistics have only appeared annually. The situation showed a marked improvement during the first half year of 1908. Instead of an excess of deaths numbering 55,007 as in 1907, there was an excess of births amounting to 11,066. This result was due chiefly to the fall in the number of deaths, the total of which fell from 457,752 to 399,336; but it was due partly also to an increase in the number of births, which rose from 402,745 to 411,402.

The male and female nurses in the Paris hospitals, to the number of about 1,500, recently held a meeting at the Bourse du Travail. After listening to speeches by MM. Abadie and Duval, the assembly voted an order of the day demanding a minimum salary of five francs a day and the application of the law giving one day of rest in seven.

Correspondence.

ANAESTHETICS ADMINISTERED FOR QUACK PRACTITIONERS.

Sir,—The other day I received a communication from the General Medical Council in which was the following notice:

> Any registered medical practitioner who knowingly and wilfully assists a person who is not registered as a dentist in performing any operation in dental surgery, either by administering anaesthetics or otherwise, will be liable, on proof of the facts, to be dealt with by the General Medical Council as having been guilty of infamous conduct in a professional respect.

The next day a literary friend of mine was telling me that a man whom he knew had just had his knee "put in" by a "bonesetter," and that the operation had been done under gas. It would be interesting to know who the qualified (?) practitioner was who administered the anaesthetic. I expect that this will appear one of these days. And then——?—I am, etc.,

February 5th. NITROUS OXIDE.

THE VACANT POLICE APPOINTMENT IN LIVERPOOL.

Sir,—I think the attention of the members of the British Medical Association ought to be drawn to the flagrant attempt of the Corporation of the City of Liverpool to sweat the medical profession in connexion with the post of medical officer to the police. An advertisement appears in the daily local press of February 3rd for a medical officer to attend the members of the police force of the B division, including the members of the staff department residing within the division, and offering a salary of £60 per annum, rising to £80 after five years' service. As there are about 280 men in the B division, and the members of the staff department residing in the division are about 50, the salary offered works out at less than 4s. a head per annum. The salary of the retiring medical officer was £80, rising to £100 per annum. This reduction is being made at a time when a considerable increase is contemplated in the rates. I hope the members of the medical profession will unite to take some effectual means to frustrate this attempt on the part of the Corporation to effect a paltry economy at their expense.—I am, etc.,

February 8th. A RATEPAYER.

SODIUM BICARBONATE IN THE TREATMENT OF CHOREA.

Sir,—In the Journal of February 6th, p. 371, my friend, Dr. D. B. Lees, refers to my paper on alkalis in the number for January 30th. He takes exception to the statement made therein that the chief drawback to the treatment of chorea by large doses of alkalis is, "of course, the profound anaemia which such medication is liable to produce." Dr. Lees is in complete disagreement with this expression of opinion, and considers my use of the words "of course" to be especially inappropriate. In his view it is not the alkali but the rheumatic element in the choreic state which is the sole cause of the anaemia, for he holds that the poorness of blood during convalescence is in no way dependent upon the remedies which may have been used in the treatment.

Now, while I am perfectly willing to admit that rheumatism is an active cause of impoverishment of the blood, especially in early life, I maintain that an alkali given frequently in large and repeated doses also contributes materially to the same undesirable end. Of these two propositions one

is surely as well founded as the other, and I had no idea that either could be called in question. It follows then that in the treatment of chorea one may be pardoned for doubting whether in this or other occasional outcrop of the rheumatic constitution it is desirable to augment so largely the lowering effect of the complaint upon the blood by the free use of a remedy which has itself a similar depressing action. Therefore, although I am far from wishing to underrate the authority with which Dr. Lees is entitled to speak on such a matter, I cannot bring myself to agree with his conclusion without much modification. In writing this I assume the accuracy of Dr. Lees's assumption that chorea is invariably associated with the rheumatic dyscrasia. This, however, is an arguable proposition and one to which I should hesitate to give my unqualified adhesion.—I am, etc.,

London, W., Feb. 6th. EUSTACE SMITH.

APPENDICITIS AND RHEUMATISM.

SIR,—On page 186 of the BRITISH MEDICAL JOURNAL for January 16th I find the interesting statement by Dr. Alexander Haig, to the effect that in his experience appendicitis is more often due to retained uric acid than it is to mechanical causes. This must be due to the fact that the great fame of Dr. Haig brings to his office a special class of appendicitis cases, and of a sort which some of us might not classify separately as belonging to the appendicitis group.

In my own work a rough classification would place about 50 per cent. of appendicitis cases in the group in which extension of an acute colitis, the presence of irritating faecal contents, or psoas traumatism lead to a swelling of the soft inner structures of the appendix within the firmer narrow outer sheath, until they suffer from compression anaemia. Bacteria then attack the unprotected anaemic tissues promptly. Such cases appear to be distinctly mechanical in origin. Perhaps 30 per cent. of my cases of appendicitis are of the class in which the appendix, undergoing normal involution, is inflamed in a chronic way through irritation of entrapped nerve filaments in hyperplastic connective tissue; 15 per cent. of my cases may be due to the congestion which goes with a loose right kidney; the remaining 5 per cent. would contain some odd or rare forms of appendix inflammation—tuberculosis, cancer, actinomycosis, and here and there a case in which the lymphoid layer of the appendix—perhaps other layers—is responding to the influence of retained uric acid in the blood.

In all of the cases of the first group, representing true infective appendicitis, it is perhaps best to operate just as soon as the diagnosis is accurately made. In the second group I have held that operation is advisable only when the "intestinal indigestion" and other reflex symptoms become too annoying. The third group of cases are apt to fade out as soon as the loose kidneys are fixed, and they seldom call for removal of the appendix. In the fourth group of cases some will require operation and some not. I have usually advised against operation in the cases in which irritation of the appendix was caused by "retained uric acid in the blood." One can separate these cases fairly well, I think, if he is accustomed to making nice diagnoses.—I am, etc.,

New York, Jan. 30th. ROBERT T. MORRIS.

IODINE FOR STERILIZATION OF THE SKIN OF OPERATION AREAS.

SIR,—With reference to the memorandum by Major Porter, R.A.M.C. (BRITISH MEDICAL JOURNAL, February 6th, 1909, p. 332), I should like to say that the method has been adopted for some time in the clinic of Professor von Eiselsberg in the Allgemeine Krankenhaus at Vienna. The line of incision is painted over before operation with a spirituous solution of iodine, and after the stitches are inserted the painting is repeated. The object is not only to sterilize the incision area, but to prevent the invasion of staphylococci, etc., from the neighbouring unsterilized skin. When I was working in Professor von Eiselsberg's clinic in 1907 I saw over 200 operations all treated in this way, and in no case was there ever a suspicion of a stitch abscess, all the incisions being absolutely sterile. It is a measure well worth adopting in this country. With regard to the preparation of the skin, the patients are all washed with soap and water half an hour prior to the operation and then rubbed with pure alcohol, the skin dried, and a pad of sterile gauze applied until the operation; no antiseptic dressing is ever put on. The results will bear comparison with any of our English hospitals.—I am, etc.,

H. GOODWIN, F.R.C.S.Ed.

Bovey Tracey, South Devon, Feb. 7th.

PERNICIOUS ANAEMIA AND PYORRHOEA ALVEOLARIS.

SIR,—I am surprised at Mr. C. Wynn Wirgman's statement that dropping out of the teeth is clear evidence of the presence of typical pyorrhoea alveolaris at a recent date. I am under the impression that in old people the teeth not infrequently drop out from simple atrophy of the gum without any pyorrhoea, and that the same thing may occur between the ages of 50 and 60, or even earlier. I have also seen the teeth drop out without any pyorrhoea alveolaris in some cases of tabes. Not being a dentist, my opinion on the point is, however, of little value. I have therefore consulted an eminent dental colleague whose opinion I regard as authoritative; he writes me as follows:

> I have to thank you for the two copies of the BRITISH MEDICAL JOURNAL containing your note on a case of pernicious anaemia, and a letter commenting thereon by Mr. C. Wynn Wirgman. I had, however, read both of these communications before and had it in my mind to write something in correction of the assumption put forward that a condition of pyorrhoea alveolaris is a necessary precursor of the shedding of the teeth. As a matter of fact, the shedding of the teeth may, and most frequently does, occur as a physiological, not a pathological, process.
>
> Atrophy of the alveoli takes place; with the disappearance of the sockets, the teeth first loosen, then fall out, the process not being accompanied by, or due to, any septic infection whatever, and no pus being formed. This atrophy may be a simple atrophy, or an osteo-porosis. In pyorrhoea alveolaris the alveoli also atrophy, but the condition is one of osteitis rarefaciens, which is always secondary to a suppurative inflammation of the gums due to infection by pyogenic cocci, usually associated with a deposit of tartar on the necks of the teeth, often with a general oral sepsis, and sometimes with wasting diseases or other disturbances of metabolism—for example, gout or rheumatism.
>
> The simple atrophy of the alveoli is to be regarded as a senile change, so too, as a rule, the osteo-porotic, but the alveolar process may disappear prematurely, a state of affairs which has been dignified by the name of atrophia alveolaris praecox.
>
> I must emphatically dissent from the dictum of Mr. Wirgman that the dropping out of the teeth is absolutely diagnostic of the presence of pyorrhoea alveolaris at a recent date. I must confess at the same time that I have no knowledge of the "less obvious symptoms and signs" of this disease which he leaves us to infer are only recognizable by a dentist, though I am anxious for enlightenment.

—I am, etc.,

Edinburgh, Feb. 4th. BYROM BRAMWELL.

CONFERENCE ON THE MEDICAL PROFESSION AND FRIENDLY SOCIETIES.

SIR,—Heartily as I agree with your correspondent "Anhidrotic," I feel that even the satisfactory settlement of the club question—if that be possible—would be but a half-measure.

Is it not time for the causes of the evil to be attacked and removed? These seem to me to be, at least in the main, obvious enough, yet much talk and little treatment is accorded to the matters which are mere symptoms. In my opinion, the causes are: (1) That a large section of the lay public, imbued with the spirit of the times, is consumed with desire for the cheap. These people require not an honourable gentleman who puts his patient's good before all questions of personal advantage, but a hired quack, whom they tempt to cheat them by inadequate payment, often grudgingly given, often withheld. And (2) that men not fit to enter any profession—least of all the medical—have unscrupulously employed trade methods, and have even sought to cloak their actions under the guise of philanthropy.

The education of the public may be achieved in time if we reform within the profession, and if men like Sir Thomas Barlow will speak out as he did on February 6th. For the safeguarding of the honour of the profession surely some means can be found. Could a recognized scale of charges not be drawn up by the Association as a recommendation, and could not each Branch, or, if thought advisable, a smaller district, decide upon a minimum local fee?—I am, etc.,

February 9th. ONE WHO TRIES TO PLAY THE GAME.

THE HOME TREATMENT OF SCARLET FEVER.

SIR,—In view of Dr. Harold Kerr's summary dismissal of Dr. Milne's claim as to the efficacy of eucalyptus oil in preventing the spread of infection in scarlet fever, I should like to submit a few cases which certainly appear to support Dr. Milne's statements.

After seeing Dr. Milne's first communication on the subject I decided to try this method of inunction, but substituted the sucking of formamint tablets for the throat-brushing. In the following table are included *all* the cases of scarlet fever, except those removed to hospital, that I have attended since beginning this line of treatment:

Case.	Rooms in House.	Other Children.	Subsequent Cases.	Desquamation.	Remarks.
1	3	1	0	Hands and feet	Two other cases previously to beginning inunction.
2	2	1	0	Hands	Patient's bed in living room.
3	2	1	0	Hands	Patient's bed in living room.
4	2	4	1	Free; rubbing stopped	Subsequent case occurred five days after the first. Both cases then removed to hospital.
5	2	3	0	*Nil*	Direct communication between the living and patient's room.
6	2	3	0	*Nil*	Direct communication between the living and patient's room.
7	2	2	0	*Nil*	Direct communication between the living and patient's room.
8	2	2	0	*Nil*	Direct communication between the living and patient's room.
9	2	0	0	*Nil*	Direct communication between the living and patient's room.
10	2	1	0	*Nil*	Patient's bed in living room.
11	2	1	0	*Nil*	Patient's bed in living room.
12	2	1	0	*Nil*	Patient's bed in living room.
13	4	1	0	*Nil*	After the fifth day there was no attempt at isolation, and the other child even slept with the patient.

Only children who had not previously suffered from scarlet fever are included in the second column, and the parents and other adults living in the house have been entirely ignored.

I noticed in the first few cases that desquamation occurred on the parts from which the oil had been washed or rubbed off. Hence, in the later cases, I prohibited washing for five days, and ordered the hands to be covered with cotton gloves. After adopting this plan none of the cases desquamated.

It seemed to me that in this series of cases recovery was much more rapid than usual, even in those which were very acute at the onset of the attack. The only explanation I can offer is the patient's living in an atmosphere of eucalyptus vapour, which should prove an advantage in the fight against the specific organism.

Dr. Harold Kerr scoffs at the idea of an aroma killing anything—an undoubtedly ridiculous idea, an aroma being a *sensation* due to the presence of the vapour of some volatile substance. May not the vapour of the volatile substance be of some value as an antiseptic? Surely he does not deny that formalin vapour comes under this category?

I shall not attempt to give the explanations Dr. Harold Kerr asks for; and I hope he will be kind enough not to explain away the facts I have given on the grounds either of twelve errors of diagnosis or of twelve separate coincidences.

Finally, I should venture to suggest that Dr. Harold Kerr would be better able to sit in judgement on Dr. Milne and his methods if he gave these a trial instead of quoting authorities and asking conundrums.—I am, etc.,

Dunfermline, Fife, Feb. 1st. J. DALGLIESH.

THE RADIUM INSTITUTE.

SIR,—We are told in your editorial of last week that the justification of the existence of the Radium Institute lies in the fact that radium is expensive. We are also told that it is intended to charge suitable fees to those who can afford them. In other words, a monopoly is to be created for the treatment of certain diseases with funds provided and an amount of patronage accorded which will ensure its success. May I ask if the formation of an institute on these lines is fair to those members of our profession who have devoted their time, at great personal risk and some sacrifice, to the study of radiations in general? There already exists in many of our large hospitals special departments devoted to the application of x rays, Finsen light, and electro-therapeutics in which the necessary experiments with radium could be carried out, granting that the material is forthcoming. Might I suggest that the Radium Institute find the radium, and that the work be done by the specialists connected with our existing special departments?

One might imagine, from the amount of publicity which is being given to the therapeutic effects of radium, that some new phenomena had been recently developed; but this is not the case. Sir Frederick Treves's lecture upon the subject contains nothing that is new, and that was not previously known to all those who have studied the subject. He is, however, to be congratulated in bringing the facts to the notice of the profession in a manner calculated to win their confidence. Many hospitals have already a supply of radium, and experiments have been in progress during the last six years. The Imperial Cancer Research Fund has also experimented, and many of the results obtained have from time to time been published. The reported results have certainly not been quite so successful as those quoted by Sir Frederick Treves, but the amount of radium at their disposal may not have been large enough.

That radium has a great field of usefulness in the treatment of disease I am confident, and it may effect cures where the x rays have failed: nevertheless it is unfair to decry the x rays on this ground. There is no royal road to cure any disease, and one method of treatment often fails where another is successful. The x rays have proved a useful servant to us, and I most emphatically disagree with the assertion that we have reached the limit of their power. Indeed, I am more in agreement with those who say that radium can achieve nothing which the x rays cannot do better and more quickly. The x rays may have cured many cases where radium has failed.

As an instrument for diagnosis the x rays have far surpassed the predictions of the early workers, and if surgery has not advanced as the direct result of their application it is because surgeons have been slow to take advantage of the increased power placed in their hands. In the treatment of lupus the x rays have achieved more than any other therapeutic agent, notwithstanding that in some cases they fail to produce any very marked benefit. In the treatment of ringworm and sycosis a cure can be promised with certainty. In epithelioma and rodent ulcer a cure can be brought about, but unfortunately it is seldom lasting. Warts, moles, dermoids, port-wine marks, etc., can be removed. Itching is relieved in nearly every instance, and as an analgesic the x rays have no competitor. In the treatment of cancer the x rays have proved of the greatest service; they certainly, so far, cannot be put forward as a cure, although they have a direct influence upon the growth of young cancer cells; but they relieve the pain, lessen the rate of growth, diminish the amount of discharge, enable the patients to sleep, make their lives more comfortable, and occasionally bring about as nearly a cure as can be obtained by any other method.

The scope of the application of the x rays is continually enlarging, and will continue to enlarge as our knowledge of them increases. Their action upon the blood is as yet imperfectly understood, and we have an unlimited field for research yet untrodden.

Experiments with the x rays are exceedingly costly and dangerous, and it must not be forgotten that whilst the initial cost of radium is enormous, when once obtained it is a constant quantity, whose properties only require investigation; x rays, on the other hand, have to be produced by means of mechanical and electrical contrivances, which are constantly being improved, involving an everlasting renewal and change of costly apparatus. The progress of the x rays has in the past been hampered by want of funds, and if the Radium or some other institution could help us in this matter, I can safely predict a valuable return for the money.

The analgesic properties of radium are for the most part

superficial, whilst it is in deep-seated and un-get-at-able pain that the *x* rays prove most useful.

I do not for one moment wish it to be thought that I in the least degree depreciate the value of radium, but inasmuch as the effects of radium are to a large extent due to its giving off *x* rays I contend that the investigation of these therapeutic agents should rightly be placed in the hands of those who in the past have sacrificed so much in their efforts to apply the *x* rays to the relief of pain and suffering.

The question has been asked, Is radium a new healing force, or merely a very powerful and penetrating caustic? It is curious that the same question was asked about the *x* rays. As far as the *x* rays are concerned, the fact that deep-seated structures can be influenced without any effect being produced upon the skin, and that changes in the blood follow their application should be a sufficient answer; and as far as radium is concerned, there can be not the slightest doubt that it exhibits properties far exceeding those of a caustic; moreover, its effects are not penetrating.

If the Radium Institute is to carry out investigations with any chance of success, it must necessarily be equipped with the apparatus for generating *x* rays, ultra-violet rays, high-frequency currents, etc. May we assume that these agencies will also be applied to paying patients? If so, where, may I ask, will this institution differ from an electro-therapeutic institute run for the purpose of making a profit? Whilst I heartily agree that no stone should be left unturned which is likely to increase our knowledge concerning these valuable remedies, it must not be forgotten that radiography is recognized as a special branch of our profession, and there exists a number of medical men whose living depends upon it. I trust that the committee of the Radium Institute will keep this fact in mind when drawing up rules for their future guidance.—I am, etc.,

Birmingham, Feb. 8th. JOHN HALL-EDWARDS.

BOYS' RACES.

SIR,—Pray extend the hospitality of your columns to the opinion of our highest medical authorities, and so save many a boy from physical wreckage in his youth or later years.—I am, etc.,

J. HERBERT FARMER,
Old Harrovians and Middlesex County Footba
London, W., Feb. 5th. Captain, 1885-91.

19, Portland Place, W.,
January 26th, 1909.

Dear Mr. Farmer,

In reply to your inquiry, we have no hesitation in saying that we consider that school and cross-country races exceeding one mile in distance are wholly unsuitable for boys under the age of 19, as the continued strain involved is apt to cause permanent injury to the heart and other organs.

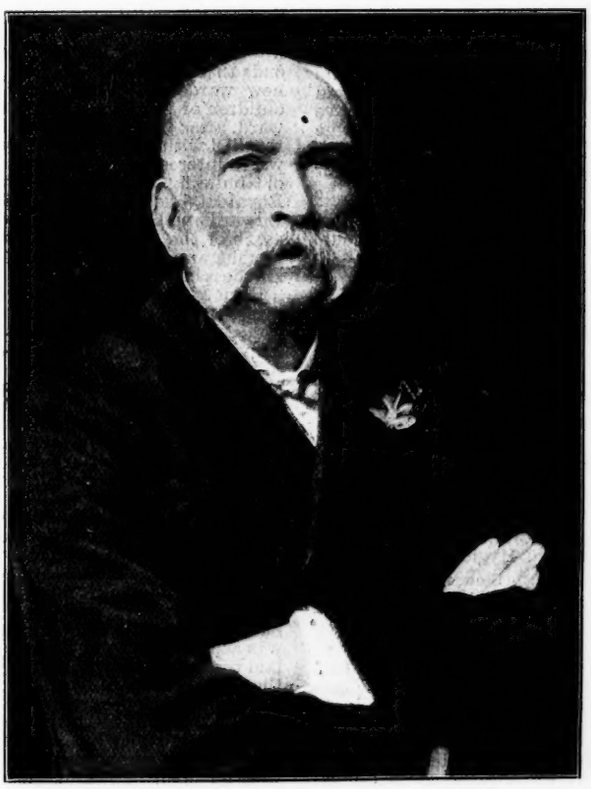
Yours faithfully,
(Signed) LAUDER BRUNTON.
THOMAS BARLOW.
JAMES F. GOODHART.
W. HALE WHITE.
ALFRED FRIPP.

Obituary.

ALEXANDER PATTERSON, M.D., F.R.C.S.,

LATE SURGEON TO THE WESTERN INFIRMARY, GLASGOW.

DR. ALEXANDER PATTERSON, for some thirty years a leading consulting surgeon and teacher of clinical surgery in Glasgow, died recently at Draperstown, co. Derry, a property which had been in his family for many years, and to which he retired about four years ago.



Alexander Patterson was educated at the University of Glasgow, and graduated M.D. in 1854; he became F.R.C.S.Edin. in 1860, and F.F.P.S.Glasg. in 1869. In 1868 he was appointed Dispensary Surgeon to the Royal Infirmary and Surgeon to the Glasgow Lying-in Hospital. In 1872, having removed to the western part of the city, he became Surgeon to the Lock Hospital, and shortly afterwards to the Western Infirmary, then recently opened. While attached to the Royal Infirmary, he had the great advantage of witnessing the steps by which Lord Lister developed the antiseptic system. Patterson early grasped its significance, and in addressing the Glasgow Medico-Chirurgical Society in 1873, he spoke of it as ranking only second in importance in practical surgery to the introduction of chloroform. As an operator he was both skilful and successful, remarkable for his neatness and rapidity, due, probably, in part, to the fact that he was ambidextrous. His surgical dexterity, combined with his adoption of the antiseptic system, account for the long series of ovariotomies he performed without a death, at a period when such a record was the exception rather than, as at the present day, the rule.

He was a pioneer in renal surgery, and published in 1880 what is believed to be the first case of nephrotomy deliberately undertaken for the removal of a stone from the kidney. He wrote on the treatment of aneurysm by digital compression, and on strangulated hernia, his interest in the latter subject leading him to devise a herniotome, which was a great improvement on that invented by Sir Astley Cooper. He also appreciated the importance of fresh air at a time when the belief that warmth was necessary for surgical patients sometimes led to hospital wards being very ill-ventilated. He insisted on all the windows in his wards being kept wide open at the top day and night, and often asserted, not only that the nurses in his wards were the healthiest in the infirmary, but also that surgical patients admitted with bronchitic coughs rapidly got rid of them.

He was a man of some what austere exterior, but possessed a most genial and lovable nature, and was always delighted to help a younger man to acquire the surgical art. As a clinical teacher he had a high reputation, and his old students will agree that what they learnt from him has always remained with them. As an operating surgeon Dr. Patterson was for some thirty years one of the best known men in the West of Scotland, whose opinion was valued as highly as his operative skill was admired.

In his early days he was an enthusiastic volunteer, and always recalled with pleasure that he was one of the guard of honour formed to receive Queen Victoria at the opening of the Loch Katrine Waterworks in 1859. He had a fine collection of coins, tokens, and medals, and was well known as a collector of the works of Robert Burns.

GEORGE WATT, M.D., J.P.,

ABERDEEN.

STUDENTS of Aberdeen University in the early Seventies will hear with regret of the death of Dr. George Watt. He died from cardiac disease on the morning of February 3rd. A native of Donside, where he was born sixty-one years ago, he went to Aberdeen with the intention of studying for the legal profession, but medicine had greater attractions for him, and after being three years in a lawyer's office he entered Marischal College as a medical student. After graduating M.B. and C.M. in 1876, Dr. Watt practised four years in Yorkshire, but returned to Aberdeen in 1880, and soon acquired a large general practice; for many years he acted as one of the Dispensary Surgeons and was Medical Officer to Blairs College and St. Nazareth House. An ex-President of the Medico-Chirurgical Society, he continued till the last to take an interest in its proceedings, especially the Widows' Fund, of which he acted as treasurer. Some years ago he purchased the estate of Invernettie, Strathdon. Dr. Watt was a devoted Churchman and a staunch Conservative; he was a man of amiable disposition, ever ready to hold out a helping hand to a brother in distress; he was held in high esteem by the medical faculty in Aberdeen. He leaves a widow and daughter—an only child—to whom the sympathy of a wide circle of friends will be freely extended.

Public Health AND POOR-LAW MEDICAL SERVICES.

DAMAGES FOR DEFECTIVE DRAIN.

H. G. writes: A. is a medical practitioner renting a house from C., and B. lives next door. B.'s servant puts a tin down the water-closet drain, which, by causing an obstruction, brings about a bursting of the drain into A.'s cellar, which then has 4 in. of water, owing to the overflow of a surface drain that C. had neglected to put in order. The cellar walls are soaked in a foul mixture of stale water and faecal matter, and A., who had been convalescing from an illness, has a relapse due to blood poisoning. Acting on medical advice, A. closes the house and removes to other quarters with immediate favourable results. His locumtenent and servants also exhibited signs of sewage poisoning. (1) From whom can A. claim compensation for damages? (2) Would C. have ground for a claim against B. for depreciation in letting value of the house?

*** (1) On the facts stated A. would have a claim on B. for damages, but the matter is complicated by reason of the cellar being already in an insanitary condition owing to C.'s default. Our correspondent before taking any action would be wise to consult an experienced solicitor, as many technical points might arise, as, for instance, the nature of the drain, and who was responsible for keeping it in repair; was the drain that burst B.'s private drain, or a drain common to A. and B.? (2) C. would also have a claim against A., but the fact that the damage might have been partly due to his own default would tend to militate against his claim.

Universities and Colleges.

UNIVERSITY OF EDINBURGH.

THE following candidates passed at the January examinations for the diploma in Tropical Medicine and Hygiene:

Samuel Alexander M'Clintock M.B., Ch.B., Stewart M'Naughton, M.B., Ch.B., Hugh Lancelot Sells, M.B., Ch.B.

UNIVERSITY COLLEGE OF SOUTH WALES AND MONMOUTHSHIRE.

AT a meeting of the council on February 4th, Sir Alfred Thomas, M.P., presiding, much time was given to the consideration of the financial position, and a committee was appointed to prepare a scheme for submission to the Court of Governors on February 18th. Arrangements were suggested for the award of the ten scholarships to be offered to the Cardiff Education Committee by the college in return for the increased annual grant of £400.

Mr. J. Austin Jenkins, B.A., the registrar, was appointed representative of the college on the council of the Central Welsh Board; Dr. W. E. Thomas, Pentre, the Rev. J. Morgan Jones, and the Rev. H. M. Hughes, B.A., were elected, with the principal, the representatives of the council on the court of the university.

It was resolved to present an address in English and Welsh on the occasion of the Darwin jubilee celebration in Cambridge next summer.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

AT the monthly business meeting of the college, held on Friday, February 5th, the President admitted as Licentiates in Midwifery the undermentioned candidates who had passed an examination for that Licence held on Thursday, February 4th:

Mangaldas Vijbhucandas Mehta, B.A., L.M.and S., Bombay, 1908. Kathleen Reed, L.R.C.P.and S.Edin., L.F.P.and S.Glasg., 1909.

CONJOINT BOARD IN IRELAND.

THE following candidates have passed the examinations indicated:

THIRD PROFESSION EXAMINATION.—G. F. Allison, A. D. Clanchy, Miss M. E. Coghlan, O. G. Connell, C. A. Farrell, J. W. Flood, F. H. Gleeson, P. Harrington, J. P. Johnston, D. J. Lyne, J. Mitchell, F. J. McManus, J. H. O'Neill, R. P. Thomson, H. Q. O. Wheeler, J. McG. Williams.

SUPPLEMENTAL PRELIMINARY EXAMINATION.—T. S. Ambrose, J. F. J. Carroll, M. Cahill, J. J. Cosgrove, J. P. Grimes, J. M. Marron, P. W. O'Connor.

APOTHECARIES' HALL OF IRELAND.

THE following candidates having passed the necessary examinations have been granted the diploma:

C. J. Neilan, T. E. Johnson, E. Johnson.

Hospitals and Dispensaries.

THE ROYAL PORTSMOUTH HOSPITAL.

OPENING OF NEW CHILDREN'S WARDS.

THE new children's wards of the Royal Portsmouth Hospital were opened on February 3rd by Princess Victoria of Schleswig-Holstein, President of the Portsmouth Branch of the League of Mercy. With the erection of the children's wards three of the four blocks included in the original plans of 1897 have been completed.

The new block, which owes so much to Mr. J. J. Young, J.P., Chairman of the Building Committee, are designed on the most modern principles of sanitation and hygiene. It contains two wards, one for boys and the other for girls, with 20 beds and 4 cots in each. There are also two small side wards with 2 beds in each; accommodation is thus provided for 52 children in all, as compared with 36 in the old wards. The wards have windows on every side except the north, and they will have the sun the whole day through; the area of glass is estimated to equal one-fifth of the area of floor space. The enamelled walls are embellished with inlet picture panels illustrating well-known nursery rhymes executed in painted tiles procured from the Royal Doulton Potteries. The wards are fitted with their own kitchens, bath-rooms, and necessary offices. At the southern ends there are covered balconies for convalescent patients. The new wards are called the "Edward and Mary," after the children of the Prince and Princess of Wales, and the "Young" ward, after the Chairman of the Building Committee. It was recalled with pride that the royal family have always taken a warm interest in the hospital, since the foundation stone of the old building was laid by the Prince Consort in 1847, and His Royal Highness and Queen Victoria became its patrons, as King Edward and Queen Alexander are to this day. The foundation stone of the new blocks was laid in 1897 by the Duke of Connaught, and they were opened two years later by the Duke and Duchess of York.

Princess Victoria of Schleswig-Holstein was received at the hospital by the Bishop of Winchester, president of the institution, Alderman Sir George Couzens, chairman of the governing body, the Rev. W. C. Hawksley, chairman of the committee of management, and Mr. J. J. Young, J.P., chairman of the building committee. Statements as to the raising of the necessary funds, the steady growth of the hospital, and the details of the actual building of the new wards were given respectively by Mr. Young, Dr. Ward Cousins, and Mr. C. W. Ball, honorary architect to the hospital.

Dr. Ward Cousins, in eulogizing what he termed "those splendid wards," said they were up-to-date, and there had never been anything like them in Portsmouth before. They would be of enormous benefit in the treatment of the poor children. The original decision to build a hospital was arrived at in a meeting held at the Beneficial Society's Hall, Portsea, in 1846, when the Mayor (Mr. James Hoskins) presided, and on that occasion £700 was raised in the room, and 100 life subscribers were obtained. Several sites were offered by the Board of Ordnance. A contract was accepted, and on September 27th, 1847, the Prince Consort laid the foundation stone, the building being formally opened by the then Bishop of Winchester on January 22nd, 1849. Commenting on the progress of the institution during the next fifty years, Dr. Ward Cousins said that it was an old-fashioned building, but slowly, quietly, and unostentatiously good work was done within its walls, and various extensions and reforms were effected. Towards the end of the last century the wave of hospital improvement which had spread over the country reached Portsmouth, at the time of her late Majesty's Diamond Jubilee. Plans were got out for the rebuilding of the whole hospital, and in 1899 two new blocks were opened. Now they were about half-way through the new Portsmouth Hospital, which was sure to make progress and be completed.

A vote of thanks to the Princess Victoria was proposed by Sir George Couzens, and seconded by the Rev. W. C. Hawksley, after which Her Highness made a tour of inspection of the hospital.

Medico-Legal.

PUBLIC INQUIRY REGARDING A DEATH FOLLOWING AN OPERATION.

BEFORE Sheriff Laing and a jury at Aberdeen on February 4th an inquiry was held—probably the first of the kind in Scotland—in regard to the death in the Royal Infirmary, Aberdeen, of a child 3 years old. The petition set forth that "on January 6th, in the Royal Infirmary, while Alexander Mann was beginning to recover consciousness after undergoing an operation under an anaesthetic he became sick, and died from asphyxia caused by his being unable to bring up the vomited matter with which his stomach was charged."

Evidence was led to the effect that this child was a patient at the out-patient department of the infirmary. The attending surgeon considered that it was necessary that the child should come up for a slight operation on a stated afternoon. Dr. Smith, the surgeon who was consulted, stated that he gave instructions that on the day of the operation the boy should have a light breakfast, no dinner, but perhaps a little milk or beef-tea in the forenoon before bringing him to the infirmary. Dr. Smith's evidence was corroborated by the house-surgeon. On the other hand, the mother of the child stated that she got no definite instructions as to feeding, and that the boy's dinner, which he ate a couple of hours before going to the infirmary, consisted of a few pieces of beef. She further stated that the nurse in charge did not ask her what food the boy had taken that day, neither did the house-surgeon nor the surgeon who operated. These two gentlemen stated in their evidence that they did not inquire as to what food the child had taken. Dr. Danson, the house-surgeon, stated in his evidence that he administered the anaesthetic, A.C.E. mixture; the child took the anaesthetic well, and the operation was performed by Dr. Gilchrist quite successfully. It lasted about eight or ten minutes, and was quite simple. About four minutes after Dr. Danson had ceased administering the anaesthetic he noticed some sickness coming on as the boy was recovering from the anaesthetic. He called for certain things, used them, and the boy recovered. Another and a much more severe attack followed, and the doctor suggested a more radical step for bringing the boy round, which was carried out in succession. The boy breathed for some time after that, and apparently had recovered, but within three or four minutes he showed signs for the third time that he was going to vomit, with the result that artificial respiration was adopted and the throat cleared out. Eventually, however, the boy became so bad that the operation of tracheotomy had to be performed. The boy vomited solid beef, and Dr. Danson took beef from his throat and from below the wound.

Sheriff Laing, in addressing the jury, said: This case is different from the usual class of cases in connexion with the inquiries under the Fatal Inquiry Act. There was no fatal accident in the case, and the reason why the inquiry was held was that the Lord Advocate may order an inquiry into any case where death has arisen from circumstances into which he thinks it necessary there should be some investigation. The importance of the case, apart altogether from the unfortunate result which attended the operation, lay in the fact that the sudden death occurred in the Royal Infirmary. The circumstances attending the death of the child were perfectly clear. It appeared that it was necessary that some slight operation should be performed, and Dr. Smith, who was consulted by the child's mother, fixed a certain date on which the mother should take the child to the infirmary for the purpose of having it operated on. It was clearly proved that Dr. Smith gave the usual and necessary instructions to the child's mother—to see that on the morning of the operation the child should get nothing substantial to eat. To use Dr. Smith's own words, he told the mother that she should give him an aperient the night before; that in the morning he was only to have a very light breakfast, and that he should have nothing between that time and the operation unless it was a glass of milk or a little beef tea, or some slight nourishment of that kind. Having reviewed part of the evidence, the Sheriff concluded: There has been nothing disclosed which in any way reflects on the administration or management of the infirmary. It is essential, of course, that an institution of the kind, within whose walls a great and noble work is being performed, should carry with it the confidence of the public at large, and I can only desire to say that there has been nothing in this case suggestive that there was any carelessness in the way in which the operation was performed, or that reflected on the management of the infirmary in any way. A verdict in accordance with the evidence was returned.

FEES AND EXPENSES FOR TREATMENT OF DECEASED PATIENT.

LAST week an interesting case was tried at the Tralee Quarter Sessions, in which Dr. T. Gelston Atkins and Dr. John Booth were plaintiffs, and intimately associated were the further actions of Mr. Richard Sumner, a chemist, and Miss O'Toole, the proprietress of a private hospital. The defendants were the executors of the late Mr. Hugh Burke, of Tralee, who died leaving a large estate.

Mr. Burke, who was a patient of Dr. Hayes, of Tralee, was sent by him to Cork to consult Dr. Atkins, in whose consulting-room he showed symptoms of uraemia. He became so seriously ill that Dr. Atkins sent him to Miss O'Toole's private hospital, where for three days his condition was extremely precarious and he eventually died on the fourth day. The executors objected to pay the medical expenses of the case unless they were proceeded against. The County Court Judge gave judgement for the plaintiffs in each case, with full costs and travelling expenses, remarking that Dr. Atkins's fee of thirteen guineas was very moderate under all the circumstances.

An interesting point submitted was whether a private hospital is entitled to charge £10 for the inconvenience caused by the death of a patient residing therein. Apparently his Honour thought so, because he allowed the greater part of the nurse's charges.

WORKMEN'S COMPENSATION CASES.

Employers' Payments for Treatment.

SULEMAN *v.* OWNERS OF "BEN LOMOND"—a case which came before His Honour Judge Sir Sherston Baker, sitting at Grimsby County Court on January 26th—raised a point of considerable interest to hospital authorities. According to a note in the *Law Times*, the question was whether payment by the employers to a hospital for the benefit of an injured workman could be deducted by the employers from the weekly payments made to such workman under the Act of 1906. It appeared that an Arab seaman, while engaged on duty on board the ss. *Ben Lomond*, fell from the upper to the lower deck, and sustained serious injuries to his left thigh. The authorities of the Grimsby Hospital, to which he was taken, required the owners of the steamship to guarantee the hospital payment of 14s. a week for taking care of the injured man. This the respondents did, and admitted their liability to compensate the man at 16s. 1d. a week during his past and future incapacity. They, however, deducted 14s. a week from the 16s. 1d. during each week that the man was in the hospital. His Honour Judge Baker held that the money paid by the respondents to the hospital under the above circumstances was clearly a benefit which the applicant received from the respondents during the period of his incapacity, and that they were entitled to deduct the 14s. from the weekly payments whilst he was in the hospital.

RECEIPT STAMP.

R. R. R. asks: (1) Should the assistant give a receipt for his salary when he is paid? (2) Should the assistant affix a stamp on receipt when he receipts the salary account? (3) Is the receipt a lawful receipt if the assistant affixes a stamp and initials it, but fails to put on the stamp the date on which his salary has been paid him? (4) If he fail to do so what amount of fine is imposed by law on principal and assistant each? (5) If he fail to either stamp, or initial the stamp, can he not claim and recover in court the amount of salary which he has been already paid?

*** The answers to our correspondent's questions are: (1) If his principal desires to have a receipt he should give one. (2) Yes, if the amount is £2 or upwards. (3) Yes, the assistant must cancel the stamp, but is not bound to write the date of receipt of the money across the stamp. (4) The person giving the receipt without a stamp is liable to a penalty of £10. (5) No, certainly not. If an assistant in such circumstances sued for his salary a second time, his principal could not produce the unstamped receipt as evidence of payment, but the payment might be proved in other ways.

Medico-Ethical.

The advice given in this column for the assistance of members is based on medico-ethical principles generally recognized by the profession, but must not be taken as representing direct findings of the Central Ethical Committee.

OBLIGATIONS OF A SUBSTITUTE.

W. J. E. writes: A. and B. are practitioners in the same town. A. is urgently summoned to Mrs. C., who has met with an accident. He is out, however, and Mrs. A. sends the messenger on to B., who attends for A. Some months subsequently Mrs. C. sends for B. to attend her child. Ought B. to do so? B. feels that Mrs. C. might never have known him had he not attended for A., and yet if he refuses to attend her child he will undoubtedly offend her, and so very likely alienate others who it is very possible may become his patients.

*** It is admitted that B. acted as A.'s substitute, and obtained the introduction to the family in that capacity; hence it would be contrary to the principles of professional ethics if a few months after he were to accept the lady's child as his patient. He must disregard the contingencies which appear to weigh with him; but, if he explains the honourable obligations under which he is placed as A.'s substitute, he will find that he will gain more than he will lose in the estimation of his neighbours.

Letters, Notes, and Answers.

BRITISH MEDICAL ASSOCIATION AND BRITISH MEDICAL JOURNAL

CHANGE OF ADDRESS.

The offices of the British Medical Association and of the British Medical Journal have been removed to 429, Strand.

Communications respecting Editorial matters should be addressed to the Editor, 429, Strand, London, W.C.; those concerning business matters, advertisements, non-delivery of the Journal, etc., should be addressed to the Manager, at the Office, 429, Strand, London, W.C.

Telegraphic Address.—The telegraphic address of the EDITOR of the British Medical Journal is *Aitiology, London.* The telegraphic address of the MANAGER of the British Medical Journal is *Articulate, London.*

Telephone (National):—
EDITOR, 2631, Gerrard.
GENERAL SECRETARY AND MANAGER, 2630, Gerrard.
MEDICAL SECRETARY, 2634, Gerrard.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* British Medical Journal *alone unless the contrary be stated.*

Authors desiring reprints of their articles published in the British Medical Journal are requested to communicate with the Manager, 429, Strand, W.C., on receipt of proof.

Correspondents who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

Correspondents not answered are requested to look at the Notices to Correspondents of the following week.

Manuscripts forwarded to the Office of this Journal cannot under any Circumstances be Returned.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the Journal be addressed to the Editor at the Office of the Journal, and not at his private house.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* British Medical Journal *are devoted will be found under their respective headings.*

QUERIES.

☞ **We would request correspondents who desire to ask questions in this column not to make use of such signatures as "A Member," "A Member B.M.A.," "Enquirer," and so on. By attention to this request much confusion would be avoided. Correspondents are asked to write upon one side of the paper only.**

Westmorland asks for experience of rodagen and thyroidotoxin in the treatment of exophthalmic goître. The former is expensive and the latter is said to give equally good results and is cheaper.

Cleaning Dental Plates.

B. asks how to clean a gold dental plate which is constantly covered with deposit on its palatal surface.

*** The plate can be cleaned with superfine powdered pumice and Castile soap, picking both up with a damp tooth-brush. A trade preparation, "Savon Lacoste," made by Lacoste et Cie., 5, Camberwell New Road, S.E., is convenient.

LETTERS, NOTES, ETC.

A Priestly Febrifuge.

Dr. A. P. Lange (Couva, Trinidad) recently sent us a sample of a reputed febrifuge, prepared by a parish priest who is a native of the island. The preparation is stated to be made from native herbs. Dr. Lange informs us that it has been used in obstinate cases of malarial fever with marked success, that it has diaphoretic properties, and is mildly purgative.

The analyst's report on this specimen is as follows: It is a turbid acid liquid containing a considerable quantity of sediment; it contains no alkaloid, but a bitter principle has been extracted which is probably the principal constituent. It has not been obtained in a crystalline condition, and was therefore probably not a pure substance; but it appeared to be of glucosidal nature. It would require a rather elaborate investigation to ascertain whether this body is identical with or related to any of the ordinary medicinal glucosides. The liquid gives no indication of the identity of the plants from which it is obtained, beyond what is suggested by a pronounced odour resembling that of pimento which is observable when it is heated.

The Causation of Ingrowing Toenail and the Location of Gout.

Dr. Charles H. Joy (Tamworth) writes: Surely Dr. Stephens can appreciate the difference between being "confined to bed for a week or two" and nightly rest in bed; and is it not obvious that the pressure of tight boots includes compression of the outer side of the big toe by the adjacent toe? Dr. Stephens exultingly informs us that his patient (Fig. 2) is a tramp, and draws the inference that he therefore could not possibly have worn pointed boots. What an inference! In conclusion, I submit that we are not discussing textbooks or the salts of calcium—I refer Dr. Stephens to the opening statement in my first letter; and I respectfully suggest that when his "innate modesty revolts," etc., it is not always wise to ignore it.

Australia for the Sons of Medical Men.

Dr. Richard Arthur, President of the Immigration League of Australasia, writes that he intends to be in London in May, and that inquiries addressed to him as to agricultural colleges in Australia, at the Royal Colonial Institute, Northumberland Avenue, London, W.C., will receive attention. Information can also be obtained from Captain Collins, Commonwealth Offices, Victoria Street, S.W. As he thinks that many medical men may be considering the advisability of sending sons to farm in Australia, Dr. Arthur intends to be present at the annual meeting of the British Medical Association in Belfast.

Medical Football.

The result of the Rugby football match between English and Irish medicals (a goal and four tries to nothing in favour of the home team) at Richmond last week came as a surprise, especially to those who were present at the match. The Englishmen won the toss, and played with the advantage of a strong wind behind them till half time, when they had only scored a single try, owing to the fine defence of the Irishmen. The first scoring, twenty-five minutes after play opened, was due to a brilliant run by Palmer. All the remaining points were scored by the home team during the last ten minutes of play. The Englishmen were the equals of their visitors in tackling and their superiors in every other aspect of the game, getting the ball out of the scrum three times out of four. Bad luck contributed in no small measure to the failure of the visitors, for on nine separate occasions before they appeared on the field circumstances had forced them to reorganize their positions. It may be hoped that a game between English and Irish medicals, now that it has once been started, may become an annual fixture.

On Saturday, at Hale End, the London Hospital added to its prestige by defeating the United Services eighteen points to *nil*. The victory was due to good combined play on the part of the Hospital backs and the manifest lack of combination on the part of the Services.

Guy's Hospital visited the Plymouth district, and was defeated by the latter eleven points to *nil*. Plymouth was playing its full side, but the hospital showed unmistakable signs of the reorganization that had had to be effected to get up a team, although it had very much more of the game than is evident from the score.

St. Thomas's played the Royal Naval College at Greenwich, and were defeated chiefly in the first half of the game, the result being two goals and three tries to the R.A.M.C., and a try to the visitors.

University College won their game against the Crystal Palace Engineers. After a keen fast game, with plenty of instances of smart tackling, the Engineers lost to the College by two goals and three tries to *nil*, the success of the latter being due to the play of their three-quarter backs, who exchanged the ball with such excellent judgement that they always had a spare man on the wing to dash for the opponents' line. In forward play the two sides were equally matched.

A "Stout" Fee.

A medical practitioner, who was attending a licensed victualler, and had brought a physician to see him, said in an undertone to the wife as they were going upstairs that the fee would be "three guineas." After the consultation, as the money did not seem forthcoming, he again mentioned the fee, which was promptly paid. The doctors then prepared to depart, but the lady of the house interposed, and asked what was to be done with the three glasses of stout, which they now saw with surprise on the table, and which she averred her doctor had ordered as they were going upstairs. She thought "three Guinness" was the fee—perhaps a not unnatural mistake for a publican's wife. It was a "stout," if not exactly a fat, fee.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Eight lines and under	0	4	0
Each additional line	0	0	6
A whole column	2	13	4
A page	8	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication; and, if not paid for at the time, should be accompanied by a reference.

N.B.—It is against the rules of the Post Office to receive letters at *Postes Restantes* addressed either in initials or numbers.